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RAILWAY AGE

Two Views of the Depression

I

Let's quit. Business has gone to hell. We are simply business men, and therefore can't do anything about it.

Congress won't pass the right kind of a tax bill. It won't reduce federal government expenditures. Our state and local governments won't reduce expenditures and taxation, either. We are not citizens of the United States or of any state, county or municipality. Therefore, there is nothing we can do about it.

Let's quit. Business is rotten. Nobody will buy anything. We can't sell anything. We were wonderful salesmen when selling was simply order-taking; but we can't sell to anybody that doesn't want to buy. Therefore, let's quit trying to sell. The most useful thing we can do now is to sit in our offices, wear out the seats of our pants, and talk about how bad conditions are.

Let's quit. The country has no leaders. We complain about lack of leadership, but it does no good. We would become great leaders ourselves, but there is a law against it. There is no law against other people being leaders, but there is a law against us being leaders, and therefore all we can do is to tell others who try to become leaders that they should go away back and sit down because they don't know how to lead.

It's too bad, isn't it? But there isn't anything we can do about it. We are so wise that we know what ought to be done, and as we wear out the seats of our pants in our offices we tell each other what ought to be done and criticize everybody who is trying to do anything. But there isn't anything we can do because there is a law against us doing anything. In this country there are available means of production and distribution sufficient to provide all of our people and a large part of the entire world with every necessity, comfort and luxury. It is just too bad that we can't so use these means as to get rich by providing those necessities, comforts and luxuries. But we can't do anything about it.

Let's quit. We sit daily in our offices wearing out

II

On September 9, 1914, at the height of the first battle of the Marne, upon the outcome of which depended the fate of France, General Foch sent the following telegram to French general headquarters:

"My center gives way, my right recedes; the situation is excellent. I shall attack."

Business is rotten. There are able and brave men who are striving with all their might to lead us out of this morass. The continuance of the depression is not their fault. It is the fault of that large majority of us who are too selfish to be patriotic, too cowardly to fight and too fat to run.

A real man and patriot appeared before a Congressional committee in Washington a few weeks ago and told the committee and the world what he thought. His name is Charles G. Dawes, and he is president of the Reconstruction Finance Corporation. His message was longer, but as good and to the point as that sent by General Foch on September 9, 1914. He told the fools and demagogues in Congress how they are contributing toward the ruin of the country by soaking the rich to help the poor—to lose their jobs. Having rendered distinguished service to the American people during the late war, he told those veterans who are seeking legislation to flood the country with a fiat money bonus, that they are trying to do to their country what they were fighting to prevent the Germans from doing fourteen years ago. Then he went back to his job of helping save America.

General Dawes set an example for every American citizen. There is a big fight going on in Washington between the taxeaters and the taxpayers. The taxpayers are being beaten because while most taxpayers are wearing out the seats of their pants complaining about conditions, most taxeaters are wearing out the soles of their shoes protecting their pay and their jobs.

Why not get into the fight? The trouble is not lack of leaders but lack of followers. Most men who have accepted the titles, responsibilities and salaries of leadership will not lead themselves and will not follow those who are trying to lead. That is why almost every effort made to reform tax laws, reduce govern-

I—(Continued)

the seats of our pants telling each other what ought to be done. But there aren't enough people listening at our keyholes to be influenced by what we say, and, anyway, there are a lot of fellows outside making such a hell of a ballyhoo about what ought to be done that anybody listening at our keyholes could not hear the wisdom regarding politics, economics and business that we are distilling. Why not quit?

There isn't anything we can do. We can't produce because we can't sell. We can't sell because nobody will buy.

Nobody will buy because we can't sell. The country is going to hell. Business is dead. Let's quit.

II—(Continued)

ment expenditures, revive national credit, increase sales and production is being defeated.

Let's quit rotting. If we won't or can't lead, let's follow those who can and will. This country is not going to be saved by snake-dancing or medicine-making in Washington, but by millions of Americans ceasing to sit on their backsides and scrutinize their navels like so many Indian fakirs, and beginning to do their stuff as citizens, as business men and as workers.

Business is not dead and the country is not going to hell. Our center gives way, our right recedes, but our situation is excellent. Let's attack.

Railway Employees and Senator Brookhart

Senator Smith Wildman Brookhart has been endorsed by the Railway Labor Executives' Association and the national legislative representatives of the railway labor organizations for renomination at the primary which will occur in Iowa on June 6. This means they have asked railway employees to vote for him.

Railway employees have helped to elect Brookhart in the past. There is not one valid reason why railway employees should vote for him in future and the strongest reasons why they should vote against him. Like every other demagogue, he has professed to be their friend, but in every possible way he has shown himself actually to be their enemy ever since he has been in the Senate. If the railway employees of Iowa don't know this, it is because they don't know his record.

Not long since Brookhart was widely quoted in the press as having said that soon there might be no use for railways, and he is an advocate of every policy tending to destroy them. Of course, if the time comes when there is no use for railways, there will also be no use or jobs for railway employees.

Favors Railroads' Competitors

Brookhart advocates large government expenditures for extensive development of inland waterways. Every time a ton of traffic is diverted from a railway to a waterway the amount of employment that would otherwise be available for railway men is reduced. The railway labor organizations have adopted resolutions opposing further expenditures upon inland waterways. Why, then, do their leaders endorse for renomination Brookhart, who is one of the most blatant advocates of waterways?

Large amounts of traffic have been diverted from the railways to buses and trucks because these carriers by highway are subsidized by our governments and not regulated as the railways are. In recent hearings before the Senate Committee on Commerce, Brookhart asked witnesses many questions and made many comments showing that he favors continuance of this government unfair discrimination in favor of highway transportation and against railway transportation. In assuming this attitude he favors diversion of more traffic to the highways from the railways, and therefore the deprival of more thousands of railway employees of their jobs. In all parts of the country railway employees are carrying on organized movements to get traffic back from the highways to the railways as a means of holding and recovering their jobs for railway employees. The railway labor organizations have adopted resolutions demanding cessation of the subsidization and increase of the regulation of highway carriers. Why, then, do the leaders of the railway labor organizations endorse for renomination Brookhart, who favors exactly the opposite policy?

Opposed Increased Revenues

In 1931 railway executives were confronted with the necessity of seeking either advances of rates or reductions of wages. Most of them believed that a reduction of wages was preferable under the conditions, but they decided to seek an advance of rates because the Hoover administration was strongly opposing reductions of wages. The railway labor leaders favored the advance in rates. Brookhart appeared before the Interstate Commerce Commission and opposed the advance of rates, regardless of the fact that it then appeared necessary in order to save the railroad industry from bankruptcy. Why do railway labor leaders now support for renomination a senator who only a few months ago opposed an advance in rates that the labor leaders then favored?

In 1926 the railways had 1,806,000 employees. In

1921 they had 1,687,000. In 1931 they had 1,278,000. They now have only 1,100,000. Why has railway employment declined so much? Railway earnings are the only source from which railway employees can be paid, and railway employment has declined so much because earnings have declined so much that the railways cannot pay more men. Throughout the nine years since railway employees first helped elect him to the Senate, Brookhart has opposed every effort to increase railway earnings and supported every effort to reduce them. Therefore, throughout this time he has rewarded railway employees for voting for him by saying and doing everything he could to deprive them of their jobs and reduce their wages.

That is not the worst of it. Times such as these present government and business problems of such magnitude that they can be grasped and solved only by men of the greatest intelligence and ability. Brookhart is a stupid person with no ability excepting that to repeat year after year demagogic yaps about helping the poor by soaking the rich. The rich and well-to-do have lost more within the last three years than ever before in history, and has one single poor man benefited to the extent of a cent by the many billions of losses that the rich and well-to-do have suffered? The way to restore employment and help the poor is to revive general business and prosperity, and men of ability, not ignorant and stupid persons like Brookhart, must be sent to Washington if Congress is to help revive general business, instead of doing almost all it can to prevent business from reviving, as it has been doing for months.

Brookhart may say in reply to the above that the *Railway Age* is an "organ of the railroads". Well, which, we ask railway employees, has fought harder within recent years to get traffic back on the railroads and thereby enable railway employees to hold and get back their jobs—the *Railway Age* or Brookhart?

Every railway employee who goes to the polls in Iowa on June 6 and votes for Brookhart will vote for a continuance of the conditions and government policies which, since 1926, have caused 700,000 railway employees in the United States to lose their jobs.

What Will Happen to Shippers of Low-Rated Commodities?

Most agricultural products are handled below the actual cost of transportation. The higher rated commodities, the cream of the business, are being lost to trucks, which are permitted to operate practically unregulated and with the taxpayers' kind assistance. To put the railroads on a comparable basis with these other transportation agencies would mean nothing less than government ownership and maintenance of railway rights-of-way and track. Under such conditions, the railroads could furnish as cheap, if not cheaper, transportation for all commodities than do competitive agencies. The damaging effect of unregulated, taxpayer-assisted transportation on farmers and shippers in general is greater than is realized without a deeper analysis and some foresight. A survey of shippers in Springfield, Ill., indicated that they saved $75,000 in one year by using trucks. But the same year the city lost 300 families with a purchasing power of at least $200,000, because they lost their jobs with the railroads, due to poor business. If the cream of the railroad business is lost to trucks and other agencies supported by government and if railroads are to survive, is there any other recourse than an advance on the rates on basic commodities, such as grain, livestock, coal, steel, building material, fertilizer, etc.? The farmer least of all can afford this increase.

—From a Radio Address by T. L. Jones, Agricultural Agent, Chicago & Illinois Midland.

Employees Arouse Strong Public Support

The activity of railroad employees looking toward the formation in the various states of associations of persons friendly to the railroads is one to which railroad officers should direct their sympathetic attention. In two states, Virginia and Kentucky, these associations have already been of material assistance in securing more adequate regulation and taxation of motor transport, and there is every reason to believe that similar associations now being organized in other states should achieve equal success. The railroads have had no hand in the formation or support of this movement—which is as it should be. At the same time, however, it certainly would seem that the railroads should at least smooth the road for this movement to the extent of making it clear to all employees that such activity on their part has the approval of management.

Acknowledgement is due to the virile persistence, energy and common sense of the employees who originated this movement and got it under way in spite of the prevalent social inertia, slender finances and the hostility of beneficiaries of subsidized transport. To anyone who is inclined to doubt the effectiveness of intelligent organized activity along such lines or the ability of railroad employees so to organize and express themselves, we recommend a study of the record of the two pioneer state organizations in this field, the personnel of their leaders, their methods and their achievements.

The movement originated in the legitimate and natural desire of employees to defend their own interests—the security of their jobs. Its organizers soon found, however, that this was no selfish fight that they were waging. Not without some surprise it developed that persons of all manner of economic interests were eager to join the movement—business and professional men, farmers, bankers, municipal officials, clergymen, even truck operators who were wise enough to see that the present competitive chaos disadvantages them as well as the

railways. It is now being recognized that the cause of replacing disorder in transportation with some semblance of system is a fight, not only on behalf of the railways, their employees and owners, but also on that of the tax paying public and orderly business activity in general. The movement is not a matter of narrow group interest, but rather a campaign for sound political economy, the success of which will promote the general well-being of the people as a whole.

Huge Task Ahead

Organized effort of this character on the part of employees and taxpayers is a new development. While it has definite accomplishments to its credit, by far the major part of its task lies before it. Dozens of states yet remain to be organized, and a vast amount of educational work remains to be done. It may, therefore, be worth while to consider for a moment some of the characteristics which experience has shown make for success or failure in such a movement.

Of these the most important appears to be legal guidance. We all know of attempts which have been made to control motor transport which have been prompted more by zeal than by intelligence, with the result that laws so conceived have been invalidated by the courts. A successful employees' association, therefore, needs friendly legal assistance to guide its activities into safe channels so that its energy may not be needlessly dissipated. Such guidance, it goes without saying, must be purely advisory and not in any degree dominant or dictatorial.

Officers of such an association must be men of recognized unselfishness and devotion, who will work long hours beyond their daily tasks with no thought of personal aggrandizement. Those whose primary concern is their own personal advancement cannot avoid losing sight of the real goal—equitable taxation and regulation of all forms of transport.

The movement should be as widespread as possible. Railroad men, naturally, must take the lead but public men, quite rightly, are more interested in the desires of the great mass of citizens than those of any one group. As many railroad men as possible should be enlisted, but the effort should not end there. Certain politicians have asserted that the only persons interested in regulation of other forms of transport are the railroads and their employees. We all know that this is not true, but only by inducing our friends in all walks of life to become vocal can we hope to convince such politicians of their error.

Get Out the Votes

An association of this kind, to succeed, must impress its members with their civic duties. Its officers must keep in intimate personal touch with public men, and its members must be alert on election day. An association which seeks legislative attention and then does not do its part on election day has probably a very short future to look forward to.

The movement, then, in our opinion, is a happy augury for the future domination of justice and fair dealing in solving our transportation problems. It gives evidence of a vast body of hitherto inarticulate public opinion which, given an opportunity, will support a quick ordering of the transport household. Whether the movement succeeds or not depends in large measure on the quality of its leadership and this, in the last analysis, probably rests to a considerable extent upon the railroad managements.

Managements Can Aid

Will they, without, of course, in any way directly fostering or actively engaging in the movement, at least make it possible for their employees to participate in and promote it? Will such participation by employees be looked upon with favor, or otherwise, by their superiors? Will they make available such technical advice as the employees may seek of their own volition? Will they, in a general way, manifest the spirit of friendliness and co-operation which such a movement must have if it is to succeed?

And if this is the spirit in which they will meet this movement, might it not be a good idea to get word around to that effect? For the railroads to fail to realize upon such a potential force toward a reasonable solution of their present difficulties would be little short of tragic in such times.

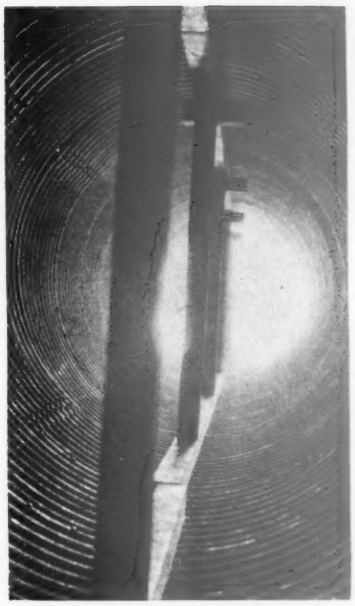
Time to Face the Facts of the Railway Situation

It is high time that the policy of vacillation in facing and solving the fundamental difficulties of the carriers be brought to an end. The dual recent influences of increased competition from other forms of transportation and a reduced general volume of business activity make impracticable the program of railway regulation implicit in the Transportation Act of 1920. The railroads no longer constitute a monopoly in the fields of transportation, and therefore it is no longer feasible for the Interstate Commerce Commission to manipulate the general level of rates in such a way as to furnish an adequate rate of return on the investment in railroad property. Therefore, either there must be a thoroughgoing revision of our scheme of transportation regulation to permit and even encourage the railroads to acquire and operate competing types of transportation, or something must be done about protecting the investment of those who put their funds into railroad securities on the basis of the "fair return on fair value" clause in the Transportation Act. The theory that the railroads constitute a transportation monopoly must either be made effective in practice in the light of new conditions, or it must be consciously abandoned.

—From the New York Journal of Commerce.

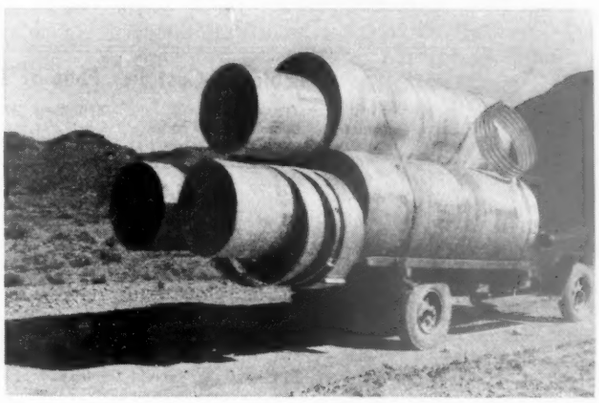
How Much for Culvert Placement?

Extensive cost studies to determine this figure were made during construction of railway to the Hoover Dam



Right—Showing the Manner of Strutting a 60-in. Culvert

Below — The Culverts Were Trucked as Near as Possible to the Point of Installation



EXTENSIVE studies of the cost of installation of corrugated iron pipe culverts were conducted in the construction of the 33-mile railroad which was built to the site of the Hoover dam in Arizona, from a connection with the Union Pacific about eight miles south of Las Vegas, Nevada. This dam, on which construction work has been under way for more than a year, is located in the Black Canyon of the Colorado river where that stream forms the boundary between the states of Arizona and Nevada, and is in a locality not reached by any railroad, being about 30 miles southeast of Las Vegas. Since the line of the Union Pacific through Las Vegas is the nearest available railroad, the spur to the dam site was built as a branch of this road, the railroad company constructing 23 miles of the line and the government the remaining 10 miles. The study of culvert placement costs was conducted jointly by the Union Pacific and the manufacturer of the culvert pipe used, as a matter of mutual interest.

Much of the material used in the construction of the railroad was hauled to the point of installation in motor trucks, and owing to the fact that the road over which the trucks operated soon became badly rutted and corrugated, thereby increasing the repair and maintenance expenses of the motor equipment, the cost of materials delivered along the right-of-way was affected considerably. Conditions encountered along the right-of-way were not exceptional and offered no serious difficulties to the progress of the work. From the point of connection with the main line of the Union Pacific to Station 300, the territory traversed is flat and required only light grading. Beyond that point the grading was heavier and more difficult to handle because of a lava formation which had cemented the large boulders. The heaviest grading on the line was encountered in the vicinity of Station 945. However, in spite of the ruggedness of this country, the deepest cut is only 28 ft. and the highest fill is less than 30 ft.

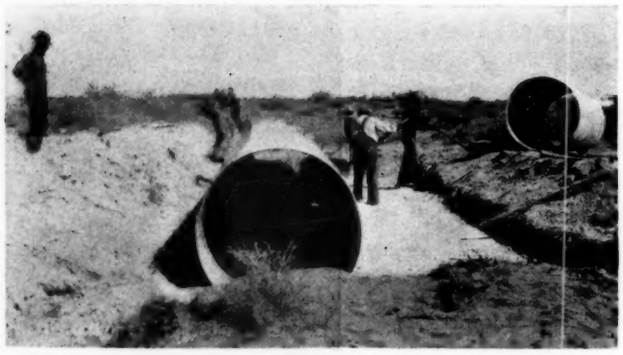
Thirteen carloads of corrugated pipe were utilized on the line and a careful check was kept of the cost of handling the pipe from the time it arrived at the unloading point until it was completely installed. Separate records were kept to determine the cost of each of the operations involved in the work, including the unloading and hauling of the pipe; the excavation; the laying and joining of the pipe; the backfilling and tamping; and the strutting of 60-in. pipe under fills of more than 10 ft. In order to speed up construction work, the culverts were hauled out by truck well ahead of the grading and installed so that the fill could be placed over them without delay. Many of the pipes were nested on the trucks to effect economy in transportation.

In many places it was difficult to decide upon the exact size of the opening required because the drainage areas had not been surveyed and their extent was difficult to estimate. Some of the washes were so large and showed evidence of having such heavy runoffs that pile trestles and frame bent bridges were provided. In all other locations Armco corrugated pipes were employed, ranging from 24 in. to 60 in. in diameter. All installations were of the single-pipe type, except at three locations where twin installations of 48-in. pipe were deemed necessary, and at one point where a twin installation of 24-in. pipe was made.

A summary of the installation costs, based on all installations on the section of the line built by the Union Pacific, including figures for 24, 36, 48 and 60-in. pipe, shows that the average cost, including hauling, excavation, laying, banding, backfilling and tamping, supervision and miscellaneous, as well as the strutting of the five 60-in. pipe as specified, was 2.25 cents per inch of diameter per foot of pipe. The economy of installing corrugated iron culverts was demonstrated particularly in the cost of laying and banding, which averaged 0.17 cents per inch of diameter per foot.

Unloading and Hauling

Another item of cost in which the economy of the use of this pipe was reflected was that of transporting the pipe from the railroad to the points of installation. The 13 carloads of pipe totaled 132.43 tons and required a total of 246.14 man-hours to unload or an average of



Tamping Under and Around a 48-in. Culvert, the First Section of a Twin Installation

1.858 man-hours per ton for unloading, which, at 50 cents an hour, gives a labor cost of $0.929 per ton.

There was considerable variation in the amount of labor required in the unloading of cars, since on some of them the diameters and lengths were mixed. The figures given above for unloading include the transfer of the 48-in. and 60-in. pipe directly to the trucks from the cars, whereas nearly all the other diameters were unloaded from the cars to the ground and the cost of hauling includes the loading of this portion of the pipe on the trucks. The unit costs for the loading and hauling of the pipe were obtained by time studies on 21 truck trips. On seven of these trips a trailer was used with the truck.

In Table I, which contains cost data on the transportation of the pipe, it should be noted that the hauls include short, medium and long distances. It will also be seen that the cost per ton-mile is less on the long than on the short hauls. There are two explanations of this. The first is that the roads used for carrying the culverts to the near portion of the line, which required hauls of from 5 to 12 miles, were unusually bad. Largely for this reason, the cost per ton-mile on the first three items in the table is more than twice that on the others. On the longer hauls—12 to 25 miles—the trucks traveled a different route. The second explanation of the difference is that most of the pipe that had to be hauled more than 12 miles was transferred directly from the flat cars to the trucks. The cost of this handling is included in the unloading item and was not charged to hauling. Because of these special conditions the costs per ton-mile in Table I should be used with discretion in estimating future work.

The rate paid for the tractor, which was needed on occasion to help the trucks over a bad stretch of road, was not available and it was estimated at $3 an hour. The hourly rate for labor was 45 cents, for the trucks it was $2 and for a truck and trailer it was $3.

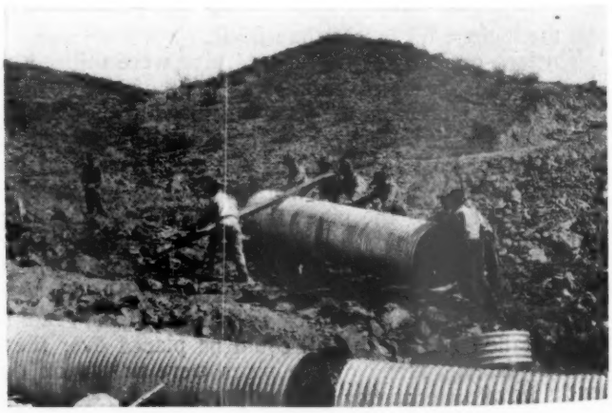
Since many kinds of materials were encountered in excavating for the culverts the cost varied accordingly. From the beginning of the line to Station 380, the material excavated was largely soil or desert sand, although in a number of places a very hard formation was encountered which had to be dynamited. From Station 380 to Station 900, loose rock predominated, with the exception of the area in the vicinity of Station 500 where many culverts were placed in lava formations. A "dobie" shot or two was effective in removing this material. Solid rock and some loose rock were found between Stations 900 and 1,010, and from the latter station to the end of the line common soil and loose rock prevailed.

The cost of excavating in the different classes of material varied considerably. By grouping the material into three classifications, earth or soil, loose rock and solid rock, the cost per cubic yard for the groups was found to be $1.26, $1.65 and $2.40, respectively. The labor rate on this work was 47 cents an hour, the foreman received $1 an hour and the truck cost $1.50 an hour.

A compilation of figures for each of the four sizes employed gave the following man-hours per foot of pipe required for excavation: 24-in., 0.712; 36-in., 0.881; 48-in., 0.615; and 60-in., 0.876. These figures were obtained from a time study of the installation of 35 cul-

Table I—Cost Per Foot of Trucking Pipe to Point of Installation

Trip No.	Length (ft.)	Diameter (in.)	Ton-Miles Hauled	Truck-Hours	Trucking Cost Per Ton-Mile	Man-Hours (load, haul & return)	Labor Cost Per Ton-Mile	Trucking Plus Labor Per Ton-Mile	Tractor Hours	Tractor Cost Per Ton-Mile	Total Cost Per Ton-Mile	No. Trucks
					$0.260	9.32	$0.118	$0.378			$0.378	
1	72	48	35.77	4.66								2
2	124	48	77.77	18.48	0.476	36.96	0.213	0.689			0.689	3
	32	36										
	58	24										
3	196	36	61.02	9.50	0.312	19.00	0.140	0.452			0.452	2
	28	24										
4	120	60	184.64	12.00	0.130	12.00	0.029	0.224	2.0	$0.033	0.257	2 + Tr.
5	40	60	270.07	15.55	0.115	39.60	0.066	0.181	1.5	0.017	0.198	3
	72	48										
	140	36										
6	120	60	180.58	14.30	0.238	14.30	0.035	0.273	1.5	0.025	0.298	2 + Tr.
7	120	48	171.74	10.0	0.175	10.00	0.026	0.201	1.0	0.017	0.218	2 + Tr.
	10	60										
8	36	48	106.36	5.0	0.141	9.0	0.038	0.179	1.75	0.045	0.224	1 + Tr.
	54	36										
	36	24										
9	60	60	88.35	3.9	0.088	3.9	0.020	0.108			0.108	2
	68	36										
10	34	48	85.35	6.5	.152	9.5	0.050	0.202			0.202	2
	32	24										
	102	36										



Because of the Rugged Character of the Country it was Necessary to Roll the Pipes to the Place of Installation in Some Cases

verts having a total length of 1,644 ft., which were laid in the various types of material encountered.

Laying and Joining

Labor costs for laying and banding the culverts were as follows. Ten 24-in. culverts with a total length of 348 ft., $0.037 per ft.; twenty-nine 36-in. culverts, 1,108 ft., $0.04 per ft.; nine 48-in. culverts, 524 ft., $0.087 per ft.; and nine 60-in. culverts, 570 ft., $0.146 per ft. It was from these figures that the average cost per foot per inch of diameter (0.17 cents) was derived. One crew of men was employed steadily on the job of laying

Table II — Cost Per Foot for Installing Culverts of Various Sizes

	10 Culverts [1] Diameter 24 in. (348 ft.)		29 Culverts [2] Diameter 36 in. (1,108 ft.)		9 Culverts [3] Diameter 48 in. (524 ft.)		9 Culverts [4] Diameter 60 in. (570 ft.)	
	Man-hours per foot	Cost per foot	Man-hours per foot	Cost per foot	Man-hours per foot	Cost per foot	Man-hours per foot	Cost per foot
Excavation @ $.47	0.712	$0.335	0.880	$0.414	0.615	$0.289	0.876	$0.412
Laying @ $.47	0.073	0.034	0.075	0.035	0.159	0.075	0.279	0.131
Bonding @ $.47	0.006	0.003	0.010	0.005	0.025	0.012	0.032	0.015
Back-filling & Tamping @ $.47	0.109	0.051	0.133	0.063	0.125	0.059	0.579	0.272
Mcle. @ $.47	0.021	0.010	0.018	0.008	0.032	0.015	0.029	0.014
Supervision @ $1.00	0.092	0.092	0.123	0.123	0.092	0.092	0.205	0.205
Trucking @ $1.50	0.092	0.138	0.123	0.184	0.092	0.138	0.205	0.308
Strutting @ $.47	....	....	....	....	...	....	0.335	0.157
Total	1.105	$0.663	1.362	$0.832	1.140	$0.680	2.540	$1.514

[1] Complete figures for excavation were secured on 6 culverts, totaling 226 ft.
[2] Complete figures for excavation were secured on 16 culverts, totaling 638 ft.
[3] Complete figures for excavation were secured on 4 culverts, totaling 210 ft.
[4] Only five culverts, having a total of 390 ft., were strutted.

and joining the pipes. The number of men varied from 5 to 15, including the foreman. The foreman and his four best men worked on every installation. In the first part of the line where the terrain was flat the culverts were mostly 24 and 36 in. in size, with a few 48 in. in diameter. The work here progressed rapidly.

In most cases the pipe was delivered by the trucks to within a few feet of the culvert location. However, at certain points this was impossible and in some cases the pipe had to be moved by hand for as much as 500 ft. over very rough ground.

Strutting

Specifications required that the 60-in. pipe be strutted when placed under fills of more than 10 ft., these struts being removed before the culverts began to function as waterways. The purpose of this precaution was to prevent excessive distortion of the pipes during the placing and settling of the embankment. Five of the pipes came under this stipulation and the results obtained fully justified this requirement. Equipment available for strutting was not of the best and consequently this operation was made more difficult than it would have been under better conditions. The two small truck jacks that were used did not have a sufficiently large bearing area and tended to kick out. By using a "follower" near the strut location and driving wedges under it, the specified five per cent or three-inch increase in vertical diameter was secured. In no case were the jacks capable of increasing the vertical diameter the required amount to permit the ready placing of the strut and compression cap. These had to be driven into place.

The backfill was tamped thoroughly around all the culverts before the installation crew left the site. In solid rock a wall was built to within five inches of the pipe with broken rock, and smaller material was then placed firmly between the wall and the pipe. The 60-in. pipe required an average of 0.579 man-hours per foot for tamping, as compared with an average of 0.122 man-hours per foot for the smaller diameters. These figures include backfilling only to the tops of the pipes and the tamping of the material on the sides. In Table II are presented itemized statements of the cost per foot of installing culverts of various sizes.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended May 7 amounted to 533,677 cars, a decrease of 20,335 cars as compared with the week before. This was a reduction of 212,063 cars as compared with the corresponding week of last year and of 398,669 cars as compared with 1930. As compared with 1929 it was a decrease of approximately 49 per cent. Small increases as compared with the week before were reported in the loading of coke and merchandise, but there was a drop of about 10,000 cars in coal loading and of about 3,000 cars in miscellaneous freight. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, May 7, 1932

Districts	1932	1931	1930
Eastern	127,208	172,567	215,731
Allegheny	106,673	153,247	193,994
Pocahontas	32,925	42,374	51,925
Southern	80,449	113,662	131,850
Northwestern	61,457	89,273	141,319
Central Western	80,926	111,125	125,857
Southwestern	44,039	63,492	71,670
Total Western Districts	186,422	263,890	338,846
Total All Roads	533,677	745,740	932,346
Commodities			
Grain and Grain Products	28,575	35,253	37,492
Live Stock	18,576	22,503	24,278
Coal	80,392	111,643	140,566
Coke	3,225	6,553	9,301
Forest Products	19,422	32,829	53,617
Ore	2,193	10,793	50,209
Mdse. L.C.L.	185,104	226,227	249,244
Miscellaneous	196,190	299,939	367,639
May 7	533,677	745,740	932,346
April 30	554,012	774,742	942,674
April 23	562,380	758,503	906,879
April 16	566,729	759,494	892,706
April 9	544,806	737,272	911,316
Cumulative totals, 18 weeks	10,102,437	13,147,861	15,987,409

Car Loading in Canada

Total car loadings in Canada for the week ended May 7 amounted to 41,028 cars which was 722 cars less than for the preceding week. This reduced the index number to 69.74, the lowest recorded this year. Grain was lighter by 639 cars, merchandise decreased by 372 cars, miscellaneous freight by 179 cars and other forest products by 127 cars. Coal increased by 598 cars and live stock increased by 148 cars. Compared with last year's loadings, the total was less by 12,259 cars, or 23 per cent. Total merchandise loading continued to decline, amounting to 14,294 cars, or 372 cars less than for the seventeenth week, and the index number reached a new low point for the year at 80.92 as against 83.11 for the seventeenth week and 83.38 for the sixteenth week.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
May 7, 1932	41,028	21,032
April 30, 1932	41,750	21,026
April 23, 1932	41,689	21,635
May 2, 1931	53,287	31,132
Cumulative Totals for Canada		
May 7, 1932	740,982	388,921
May 2, 1931	855,492	509,854
May 3, 1930	1,023,610	659,611

Is I. C. C. Stupid and Derelict?

By Horatio L. Whitridge

Part II*

Senate critical of international banks for floating foreign loans which have since fallen ruinously in price – Why not investigate I. C. C. for approving railroad loans, insisting upon top price from public, and then doing nothing to protect their values? – Transport needs representation on Presidential cabinet

IF Commissioner Porter desires a further bill of particulars of some of the things that the Commission "has done or failed to do," the following quotations selected from a number of Supreme Court decisions in which the Commission was over-ruled may serve to refresh his memory:

St. Louis & O'Fallon Case—May 20, 1929.—In the exercise of its proper function this Court has declared the law of the land concerning valuation for rate-making purposes. The Commission disregarded the approved rule and has thereby failed to discharge the definite duty imposed by Congress.

Arizona Grocery Company vs. Atchison, Topeka & Santa Fe Railway, January 4, 1932.—The Commission's error arose from a failure to recognize that when it prescribed a maximum reasonable rate for the future it was performing a legislative function, and that when it was sitting to award reparation it was sitting for a purpose judicial in its nature. In the second capacity, while not bound by the rule of res judicate, it was bound to recognize the validity of the rule of conduct prescribed by it and not to repeal its own enactment with retroactive effect.

Atchison, Topeka & Santa Fe Railway Company vs. United States Interstate Commerce Commission, (Western Grain Rate Case) January 4, 1932.—Its duty under sections 1 (5), 3 (1) and 15 (1) of the Interstate Commerce Act with respect to the prescribing of reasonable rates and the preventing of unreasonable or unjustly discriminatory or unduly preferential practices, has not been changed by the Hoch-Smith Resolution. *Ann Arbor Railroad Company v. United States, 281 U. S. 658, 669.* The legal standards governing the action of the Commission in determining the reasonableness of rates are unaltered. In the discharge of its duty, a fair hearing is a fundamental requirement. *Interstate Commerce Commission v. Louisville & Nashville Railroad Company, 227 U. S. 88, 91.* In the instant proceeding, the hearing accorded related conditions which had been radically changed, and a hearing, suitably requested, which would have permitted the presentation of evidence relating to existing conditions, was denied. We think that this action was not within the permitted range of the Commission's discretion, but was a denial of right. The order of the Commission which was thus made effective, and the ensuing supplemental order, can not be sustained.

In these three recent decisions the Supreme Court finds that the Commission failed to discharge the definite duty imposed by Congress, that it became confused between its legislative and judicial functions, and that it denied the right to a hearing to which the railroads were entitled by law. It is strange that a commission composed so largely of lawyers, has, over a period of years, been so often over-ruled by the Supreme Court.

And there is another department of the Commission's activities that is of vital interest, directly and indirectly, to a large percentage of the American people, namely the Bureau of Finance.

The Transportation Act charges the Interstate Commerce Commission with the duty of investigating all railroad financing and gives it the authority to withhold sanction for the issuance of railroad securities, or to authorize their issuance as being in the public interest. The Commission has jurisdiction over the form of railroad financing, as well as the power to dictate the price at which these securities shall be sold by the railroads. The clause giving this power is Section 20a (2).

This provision was inserted not only for the protection of the investing public, but also for the protection of the shipper, by preventing the demand for rates to pay returns on watered bonds and stocks.

Insisted on High Prices from Public

In the carrying out of its powers under this Section, the Commission inaugurated the policy of selling railroad equipment certificates on the basis of open and competitive bidding, and in the case of railroad bonds, the Commission endeavored to get the highest possible price from the public, and at least in one instance forced a railroad to cancel a sales contract because during the time that elapsed between the application and the granting of the authority to sell, a rise in the bond market caused the Commission to feel that the railroad should get a higher price.

The price received by the railroads for their bonds and the resale price to the public is a matter of record, and a few recent transactions will serve as an illustration of the loss that has been suffered by the purchaser of railroad bonds:

Date Sold	Amount	Bond		Price to Company	Price to Public	Bid May 3, 1932
Feb. 1930	$63,031,000	Balto. & Ohio Conv. 4½s....	1960	92½	95	25⅝
Feb. 1930	15,000,000	Louis. & Nash. 1st & Ref. 4½s	2003	92½	95	47⅛
Mar. 1930	15,000,000	Wabash Ref. & Gen. 5s Ser. D	1980	98	100.50	5¼
Apr. 1930	60,000,000	Penna. R. R. Deb. 4½s.....	1970	92	94½	52¾
May 1930	5,031,000	Chi. & N. W. Gen. 4¾s.....	1987	100.56	103	60
Sep. 1930	36,600,000	N. Y. Chi. & St. L. Ref. C 4½s	1978	95¼	97¾	17
Oct. 1930	10,000,000	St. L. S. F. Con. 4½s Ser. A...	1978	90.25	92.75	10½
Apr. 1931	13,943,000	Bost. & Me. 1st 4¾s Ser. JJ...	1961	97	99¼	52
Apr. 1931	50,000,000	So. Pac. 50 Year 4½s	1981	94.25	96.75	38¼
July 1931	61,200,000	Mo. Pac. 1st & Ref. 5s Ser. I	1981	92.50	95	27¾

These figures refer to specific issues of recent date. A better picture of the losses that have been suffered by railroad security holders as a whole is given in the figures published by the New York Stock Exchange, showing that as of April 1, 1932, the average price of all listed railroad bonds was $61.82 per $100 par value and the average price of all railroad stocks, both common and preferred, was $24.41.

* Part I of this answer to Chairman Porter's contention that criticisms of the I.C.C. have been "glittering generaltities" appeared in the *Railway Age* of May 14.

As to the issuance of stock, it will be remembered that the Commission, in the letter of Commissioner Eastman to Senator Couzens, previously quoted, called attention to the fact that considerable financing was done through the issuance of new stock, as supporting the soundness of their attitude towards railroad rates in recent years, and another letter from Commissioner Eastman to Senator Couzens, under date of May 17, 1930, contains the following paragraph:

> If fixed obligations, therefore, were retired in the manner proposed, no public burden would be reduced or diminished, because such retiral would not affect the rate base. The result might, it is true, be an improvement in carrier credit which would be of indirect public benefit, for the advantages of a low ratio of debt to capital stock and the disadvantages of a high ratio are obvious and have often been stressed by the Commission. But on the other hand, it is conceivable that in some instances greater immediate improvement in carrier credit might result if the money in question were used in some other way, as for the payment of increased dividends.

I.C.C. Encourages Financing by Stock, Then Washes Its Hands When Values Fall

Thus not only with the approval, but with the actual stressing on the part of the Commission a number of railroads financed through the sale of common stock. In 1929 the Baltimore & Ohio sold $40,000,000 of stock, in 1930 the New York Central sold $35,000,000, in the same year the Pennsylvania raised $70,000,000 through the sale of stock, all sold to the public at par. Thus these three transactions alone took from the investors $140,000,000, with the approval of the Commission as being in the public interest, but when the railroads in the summer of 1931 asked for a rate increase that would maintain their credit the Interstate Commerce Commission ruled:

> We do not find that we are justified on this record to attempt, by a rate increase, to protect the margin of one and one-half times fixed charges set by the New York law. To provide so far as practicable that actual interest charges be met is justified.

In other words, after urging the railroads to finance as much as possible through the sale of stock the Commission states that it is not justified in providing rates that do any more than barely cover interest charges. Thus the Commission lightly threw the common stockholders' investment on the scrap heap.

At this writing Baltimore & Ohio stock is selling at $7¾ a share, New York Central at $15½ and Pennsylvania at $10½. In view of these facts the investor in railroad securities has grounds for the belief that his loss in railroad securities is not entirely due to the business depression, but is attributable, in large measure, to the Commission's yielding to the pressure of organized industry, and taking the side of the shippers as against the railroads, instead of doing exact justice between the two. Ample grounds for the conviction that this is its attitude can be found in the Commission's own language, used in the Fifteen Per Cent Rate Case Decision, handed down October 1931:

> The public is entitled to demand that no more shall be exacted from it than the services rendered are reasonably worth, and this right takes precedence even over the right of the carrier to a fair return on its investment when the two rights cannot stand together.

If these words mean anything, they mean that in the opinion of the Commission the shipper has a claim on the railroads that takes precedence over the rights of the security holders. *Thus it is not the passing of dividends because of temporary economic conditions, but rather the attitude of the Commission that has destroyed the confidence of the public in railroad securities not only for today, but for the future.*

The Senate recently conducted an investigation into the sale of foreign bonds to American investors, and much criticism was heaped upon the international bankers for their alleged lack of investigation into foreign economic conditions and lack of foresight as to the ability of these foreign peoples to pay the indebtedness incurred, which resulted in the loss to American investors.

If there is any merit to these charges, what degree of blame rests upon the Interstate Commerce Commission in authorizing the sale of railroad securities to the American people, for in this case the value of the railroads for rate-making purposes, the rates to be charged for services rendered and their capital expenditures were under the control of the Commission?

It seems perfectly clear that it is utterly futile to blame the citizens of foreign countries for their inability to pay the staggering debt incurred during the late orgy of world-wide extravagance, when this government has been unable to manage its own affairs honestly and fearlessly, and in such a way as to protect the investments and savings of our own citizens in our own home securities.

Meanwhile it is interesting to note that while the price of railroad securities has been going down, the cost of railroad regulation has been going up, the Commission having asked for and received, for the fiscal year ended June 30, 1932, the largest sum that was ever appropriated for this purpose since the Commission was created, the appropriations made by Congress for the operation of the Interstate Commerce Commission, for the fiscal years 1920-1932 inclusive, being as follows:

1920	$5,732,672
1921	6,591,742
1922	5,500,432
1923	5,361,462
1924	5,203,860
1925	4,807,618
1926	6,790,642
1927	6,720,237
1928	7,966,314
1929	8,043,625
1930	8,212,825
1931	9,329,963
1932	9,412,473
Total	$89,673,868

Increase 1932 over 1920—64%

Thus can Chairman Porter's charge of "glittering generalities" and lack of "specific particulars" be confounded in the Commission's own words and by its own figures.

Mr. Eastman Should Have Been Asked to Resign

This writer is of the opinion that when Commissioner Eastman made the address in Philadelphia before the American Academy of Political and Social Science, on November 9th, 1931, which address contained, according to the "United States Daily" the following words:

"Personally I incline toward public operation as well as ownership. . . . At one stroke this would eliminate the troublesome question of valuation, greatly simplifying financing, largely eliminate the courts as the time-consuming factor in the situation, and reduce cumbersome judicial procedure in connection with questions of management to a minimum"—the insurance companies, savings banks, colleges, foundations and individual holders of railroad securities, both stocks and bonds, should have addressed a letter to the President of the United States, demanding the resignation of Commissioner Eastman as unsuited, by reason of his convictions, to serve as a trustee of private property and to observe, as the Supreme Court expressed it, the fundamental principle

> . . . . . that the property of a public utility, although devoted to the public service, and impressed with a public interest, is still private property.

The trouble is that the Interstate Commerce Commission has exercised either too much power or too little. The Interstate Commerce Act of 1887 and the Transportation Act of 1920 placed in the hands of the Commission police power without limit, except as far as the Constitution safeguards private property from confiscation, but the Commission has not seen fit to exercise its police power in the sense that its duty also is to protect.

Investors Trusted the I. C. C.

The Commission has seen to it that the railroads received "honest, efficient and economical management," and made "reasonable expenditures for maintenance of way, structures and equipment," all to the end that the country would have the benefit of an adequate transportation system, but the capital attracted to the railroad industry for this purpose had reason to believe that it would receive a "fair return," and, that under the supervision of the Interstate Commerce Commission, the principal would be reasonably safe. It has turned out, however, that during the past twelve years there has been expended in highway construction, automobile transport, pipe lines, air lines, flying fields and inland waterways a sum that approximates the investment in rail transportation over a hundred years. The result has been to place the transportation industry as a whole in a state of chaos, and what were considered investments suitable for trustees and savings banks are now surrounded with an element of speculation.

If it should be objected that much of the evidence here presented is of ancient date and involves members no longer on the Commission, it is only necessary to call attention to the Commission's report on the "Coordination of Motor Transportation," issued April 6, 1932. While this report describes the chaos that exists in the trucking industry, finds that competition is conducted under conditions of inequality and states that "Federal legislation relating to the regulation of motor vehicles operating upon the public highways and engaged in interstate commerce is desirable in the public interest," the value of the report is nullified because of two sentences:

> It is impossible with the information now available to determine whether or not there is a subsidy received by motor operators for hire.

and

> A searching appraisal of the economic soundness of the motor truck industry would rest on a scientific study of its costs compared with those of competing forms of transportation. The present record lacks information required in making such a study.

After Many Months of Preparation Motor Transport Study Still "Lacks Information"

Thus, after a year and a half consumed in the preparation of this report, the Commission has failed to supply the basic facts necessary for intelligent legislation, and at a hearing on the Couzens Bill before the Senate Committee, Larue Brown, general counsel of the National Automobile Chamber of Commerce, told the Committee it did not have enough facts, and he doubted if they were obtainable, to enable preparation of any sort of law of an equitable character. He referred to testimony given before the Committee by Leo J. Flynn, who presented the results of his inquiry as an attorney-examiner for the Interstate Commerce Commission on motor and rail coordination, saying the inquiry had developed only generalities.

Thus the possibility of constructive legislation, designed to help the railroads, seems to be indefinitely postponed.

The solution of the national railroad problem lies in the creation of a Department of Transportation, with a Cabinet Member at its head, and under the jurisdiction of this department should be placed all the governmental activities that have to do with the promotion, regulation and subsidizing of all forms of transportation, including steam railroads, ships, highways and air lines, all to the end that the transportation system of this country might be planned as one co-related enterprise, and thus avoid the destruction of capital through ruinous competition.

Railroad Bills Separately Reported

WASHINGTON, D. C.

THE House committee on interstate and foreign commerce on Thursday, May 19, voted to report out separately the Rayburn recapture and holding company bills which had been combined into one bill in the hope that this would promote the possibility of obtaining action on one or both bills at this session of Congress. No action was taken on a third bill introduced by Chairman Rayburn on Wednesday to substitute the plans for basing recapture on the average of the period since 1920 as favored by a minority of the committee.

Although for some time little hope had been entertained of any action on a transport bill in the Senate at this session of Congress, it had been rather generally expected that it would be put through the House until the rules committee on May 14 failed to act favorably on a special rule to give it a preferred status on the House calendar, which had been requested by Chairman Rayburn of the committee on interstate and foreign commerce. This failure to act was not necessarily final but after three days of hearings the rules committee indicated that it was not impressed with the necessity for action at this time on a bill involving so many controversial questions that it had split the interstate commerce committee into three factions.

Apparently the bill's chances for early consideration were killed by overloading, as a result of the decision to combine in a single bill the repeal of the rate-making and recapture provisions, a regulation of the activities of holding companies and individuals, and a modification of the valuation section, 19a, to relieve the Interstate Commerce Commission of any statutory direction as to how it shall bring its valuation records down to date.

It is understood this was done on the theory that most members of Congress would rush to vote for a bill designed to curb the acquisitiveness of the Van Sweringen and Pennsylvania interests and that this rush would overshadow the objections of those who were reluctant to make the railroads a present of the Interstate Commerce Commission's tentative estimates of a $360,000,000 recapture liability. There was also a theory that it might be more difficult to obtain consideration in the House for two separate railroad bills than for one, but the idea of combining the two bills was being talked of when hearings on the holding company bill were begun in February, before the committee had begun its consideration of the 15a bill in executive session, after the hearings on it in January and February.

(Continued on page 878)

Railways Spending Over $45,000,000 Monthly for Purchases

Expenditures for supplies and equipment exceed $141,000,000 in first three months of this year, with 11 per cent increase in March over January

THE statement constantly is heard that "the railways are not buying," but, in fact, the railways always are buying, and the facts as to the volume of purchases made by them in the first quarter of 1932, in the face of extremely adverse conditions, will surprise most persons even in the railway and railway manufacturing industries.

Purchases of the Class I railroads for fuel and material and supplies reached the sum of $121,350,000 during the first three months of 1932, according to special reports received by the *Railway Age* from carriers operating 70 per cent of the country's mileage, with reports still being received for March, indicating larger ultimate totals. Aggregate railway purchases in the United States are further increased by an estimated amount of $20,000,000 for the first quarter by the equipment and by supplies purchased by contractors of railway construction, and by including materials and supplies for secondary lines operating in the United States and by the railways of Canada and Mexico.

While this sum, which represents an outlay of over $47,000,000 a month, not counting purchases of electric power and allied services, is below those spent in the corresponding periods of 1930 and 1931, its magnitude blasts prevalent notions that the railroads are "not buying." Considering the straitened circumstances of the railroads resulting from a variety of causes, it also reflects their constant demand for materials.

Comprising expenditures of the Class I roads during the first three months are $48,250,000 for coal and fuel oil for locomotives, $6,850,000 for ties, $6,350,000 for rails and $58,900,000 for miscellaneous supplies. These expenditures included an estimated outlay of $3,300,000 for lumber, $4,700,000 for wheels, tires and axles, $5,760,000 for frogs, switches and crossings, $2,375,000 for telegraph and signal materials, $4,850,000 for locomotive and car castings, $2,750,000 for lubricants, $2,400,000 for electrical supplies, and $3,250,000 each for stationery and printing and for commissary supplies.

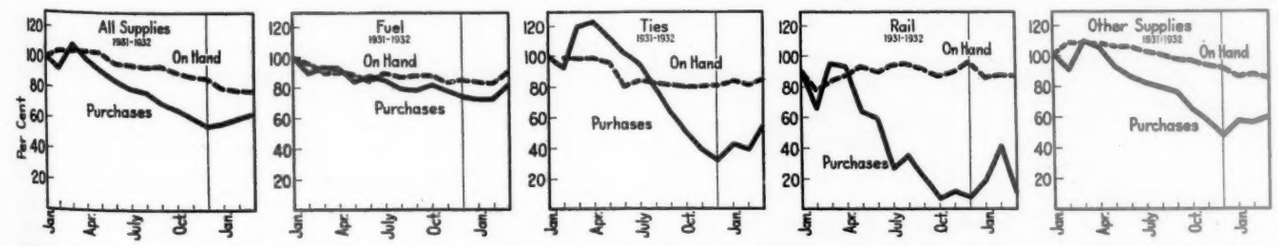
These and other divisions of the purchases for the first quarter of 1932 are shown in Tables I and II. The corresponding purchases for the 12 months of 1931 and previous years were shown in the *Railway Age* of January 9, and no reason has been found for revising the total expenditure reported in that issue or to alter substantially the various divisions of expense.

Not only were aggregate purchases actually substantial during the first three months of 1932, but impressive sums were expended by individual roads during that period. Purchases on the Pennsylvania amounted to $13,334,000. During the same period, the B. & O. spent $2,912,000 for fuel and other supplies, the B. & M. $2,003,000, the Milwaukee $4,126,000, the Rock Island 2,570,000, the G. N. $2,603,000, the I. C. $3,785,000 and the S. P. $4,564,000.

Purchases Increased

Distinctive of railway purchases during the first three months of 1932 are the general increases in expenditures from month to month, a trend which is largely a reversal of the direction of railway purchasing in the first three months of 1931. In January, 18 of 35 roads for which figures are available paid out more for ties than in December, 1931. In February, 20 of 45 roads for which figures are available paid out more for ties than in January. In March, 16 of 35 roads analyzed paid out more for ties than in February. Eight of 35 roads showed increased purchases of miscellaneous supplies in January over December; 18 of 45 roads showed larger purchases in February than in January, and 23 of 35 roads showed increases in March over February; while 7 out of 35 roads showed larger aggregate purchases in January than in December, 20 out of 45, larger purchases in February than in January and 23 out of 35, larger purchases in March than in February.

While these increases, amounting to more than 30 per cent, in some cases, were partly offset by reductions in purchases on other roads, aggregate purchases of fuel, based on all reports received, amounting to $15,450,000 in January, $15,300,000 in February and $17,500,000 in March, represented a net increase of 13 per cent over January and a large increase over December, 1931. Aggregate purchases of ties, amounting to $2,000,000 in January, $1,850,000 in February, and $3,000,000 in March, showed a 50 per cent increase over January. Purchases of miscellaneous supplies, amounting to $19,400,000 in January, $19,000,000 in February and $21,500,000 in March, showed an 11 per cent increase over January, while total purchases,



Charts Showing the Trend of Purchases and Inventories Month by Month from January, 1931, to March, 1932, Inclusive, in which the Value of Both Purchases and Inventories are Taken as 100 Per Cent in January, 1931

amounting to $38,400,000 in January, $40,000,000 in February and $42,750,000 in March, also showed an 11 per cent increase over January. Rail purchases declined. The general trend month by month since January, 1931, and the corresponding trend of inventories are shown in the charts.

Roads showing substantial increases from month to month in their purchases include the B. & O., the B. & M., the Milwaukee, the E. J. & E., the G. N., the I. C., the Soo, the Nickel Plate, and the S. P. The B. & O.

Table I—Railway Purchases—First Three Months, 1931 and 1932*

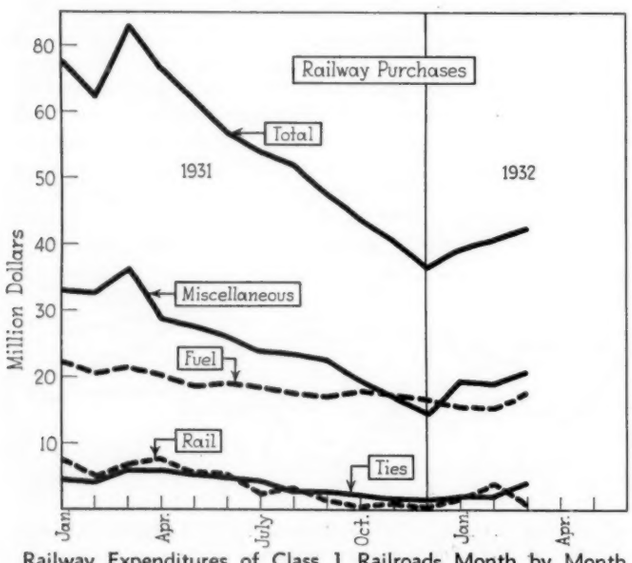
	Fuel	Ties All Kinds	Rail	Other Material	Total
		1932			
January	$15,450,000	$2,000,000	$1,550,000	$19,400,000	$38,400,000
February	15,300,000	1,850,000	4,050,000	19,000,000	40,200,000
March	17,500,000	3,000,000	750,000	21,500,000	42,750,000
3 Months	$48,250,000	$6,850,000	$6,350,000	$59,900,000	$121,350,000
		1931			
January	$22,100,000	$4,750,000	$7,550,000	$33,000,000	$67,400,000
February	20,500,000	4,300,000	4,600,000	32,600,000	62,000,000
March	21,550,000	6,150,000	8,150,000	36,950,000	72,800,000
3 Months	$64,150,000	$15,200,000	$20,300,000	$102,550,000	$202,200,000

* Represents purchases made directly with manufacturers by Class I railroads. Materials purchased indirectly and equipment not included. Subject to revision.

expended a total of $1,245,000 in March, as compared with $842,000 in February and $825,000 in January. The B. & M. expended $780,000 for supplies in March as compared with $602,000 in February and $621,000 in January. The Milwaukee expended $1,845,000 in March as compared with $1,174,000 in February and $1,107,000 in January. The E. J. & E. expended $192,000 in March as compared with $78,000 in February and $59,000 in January. The I. C. expended a total of $1,432,000 in March as compared with $1,126,000 in February and $1,226,000 in January, and the Southern Pacific's expenditure was $1,597,000 in March as compared with $1,776,000 in February and $1,200,000 in January.

April Purchases Higher

Reports available for April are still fragmentary, but encouraging. While expenditures for fuel and rail in April show declines, 7 out of 10 roads reporting actual or estimated figures thus far show larger purchases for ties in April than in January, and 7 of 10 roads show larger purchases in April than in March or January for



Railway Expenditures of Class 1 Railroads Month by Month from January, 1931, to March, 1932, Inclusive

miscellaneous supplies, with the result that aggregate purchases of these roads in April amounting to $6,379,000, were 37 per cent above the expenditures of the same roads in January.

While purchases for the first three months of 1932, and the records thus far available for April reflect in part a seasonal condition, they are in harmony with the depletion that has occurred in railroad inventories and show the increased consumption of materials to be expected from the resumption of work in many railway shops and recognition of the generally undermaintained condition of transportation facilities.

Equipment and Rail Orders

Orders for equipment and rails placed by the railroads during the first four months of 1932 reached an

Table II—Purchases of Class I Roads of the United States—First Quarter 1932

Item	1932 (3 Months)
Fuel:	
Bituminous coal	$39,750,000
Anthracite coal	1,250,000
Fuel oil	7,250,000
All other	575,000
Total Fuel	$48,825,000
Forest Products:	
Cross ties (treated and untreated)	$6,000,000
Switch and bridge ties (treated and untreated)	1,250,000
Timber and lumber	2,550,000
Other forest products	375,000
Total forest products	$10,175,000
Iron and Steel Products:	
Steel rail (new and second-hand, except scrap)	$7,350,000
Wheels, axles and tires	4,700,000
Frogs, switches, crossings, track fastenings and bolts, spikes, tie plates, rail anchors, etc.	5,760,000
Iron bridges, turntables, structural steel, bar iron and steel, forgings, fabricated and unfabricated shapes, and pressed steel parts	3,450,000
Flues and tubes for locomotive and stationary boilers	850,000
Telegraph and telephone, interlocking & signal material	2,375,000
Bolts, nuts, washers, rivets, springs, etc.	1,650,000
Locomotive and car castings, beams, couplers, frames and car roofs	4,850,000
Machinery, boilers, repair parts and all other iron and steel products	3,640,000
Total iron and steel products	$34,625,000
Miscellaneous:	
Cement	$870,000
Lubricating oils and grease; illuminating oils, boiler compound; waste	2,750,000
Metals and metal products	2,460,000
Ballast	850,000
Air-brake material and appliances for locomotives	2,030,000
All electrical materials	2,410,000
Stationery and printing	3,250,000
Commissary supplies for dining cars & restaurants	3,250,000
Rubber and leather goods	750,000
Painters' supplies and chemicals	1,770,000
Automotive equipment and supplies	805,000
Train and station supplies and all other miscellaneous purchases	6,500,000
Total miscellaneous	$27,675,000
Grand total	$121,350,000

Subject to revision. For annual purchases in 1931 and previous years, see page 87, *Railway Age*, January 9, 1932.

estimated sum of over $9,318,000, or $2,329,000 a month. The equipment, ordered from car builders and company shops, includes three locomotives for the Great Northern, 150 hopper cars for the Northern Pacific, 200 refrigerator cars for the Western Fruit Express, 4 tank cars for the Norfolk & Western, 100 refrigerator cars for the Pacific Fruit Express, 25 refrigerator cars for the Fruit Growers Express, and 30 multiple-unit passenger cars for the Reading.

Improvement programs also included orders for air-conditioning passenger cars representing an estimated sum of $1,470,000 during the four months, as follows:

Atchison, Topeka & Santa Fe	$250,000
Chesapeake & Ohio	60,000
Chicago & North Western & Union Pacific	130,000
Baltimore & Ohio	790,000
Chicago, Rock Island & Pacific	40,000
Southern Pacific	140,000

Pennsylvania Bureau of New Ideas Uncovers Valuable Suggestions

Plan provides effective means of utilizing employees' latent powers of observation and analysis

DURING the first two months of this year 115 suggestions were adopted out of the total of 308 which were finally acted upon during that period by the Pennsylvania's Bureau of New Ideas. During the first two months of the Bureau's existence—November and December, 1927—15 suggestions were adopted out of the total of 314 finally acted upon during those two months. From these figures may be gleaned an idea of the quality development in the results of employee co-operative efforts inspired by this Bureau which was established "to encourage new ideas and suggestions from employees for improving the service, increasing the efficiency of operation and advancing the interests of the company and its working forces."

The accompanying table show the results of the suggestion system and further reveals the continually improving quality of the suggestions received. While the total number of suggestions has been declining since 1929 the proportion of the total found suitable for adoption has increased materially. For example only 9.2 per cent of the suggestions submitted in the 14 months ending December 31, 1928, was adopted while 33.3 per cent of the 1931 total was accepted.

The decision of the Pennsylvania management to establish the Bureau was based upon the conviction that mutual advantages would accrue to employees and the company if there were in existence additional machinery for recognizing the capacity of employees for intelligent observation and sound, constructive thinking. The stated purposes of the Bureau are: First, to receive suggestions from employees and see to it that these suggestions are carefully considered for adoption by the company, and if adopted that recognition is made for the originality and ability represented by the suggestions; second, to provide a practical method whereby employees may co-operate with the management in its continued efforts to improve both the service to the public and the methods of operation.

It was generally realized that, with their intimate contact with the details of operation, employees have

BUREAU OF NEW IDEAS

SUGGESTIONS WELCOMED

FROM EVERY PENNSYLVANIA RAILROAD EMPLOYE

The Bureau of New Ideas was inaugurated November 1, 1927, to encourage new ideas and suggestions from employes for improving our service and operations, and thus advancing the interests of our Company and its working forces. The plan was adopted in recognition of the capacity of the employes for intelligent observation and sound, constructive thinking.

The unusual spirit of co-operation in which the employes have responded to this opportunity is indicated by the following figures. Suggestions have come from employes in all departments and from every section of the territory in which the Pennsylvania Railroad operates. Moreover, 230 different payroll titles are represented:

During	Number of Suggestions			
	Received	Finally acted upon	Adopted	
			Number	Percent
Year 1928*	2,247	2,086	192	9.2%
Year 1929	2,504	2,206	419	19.0%
Year 1930	2,440	2,584	851	32.9%
Year 1931	2,007	2,120	705	33.3%
Jan. & Feb. 1932	308	308	115	37.3%
Total	9,506	9,304	2,282	24.5%

* Includes last 2 months of 1927.

Every employe is invited to send in any idea which he believes will help to improve our methods or operations, save time, effort or material, expedite repair work or eliminate its necessity, or otherwise promote our mutual interests.

An idea which an employe thinks is practical, will be welcomed and receive careful and impartial consideration.

Receipt of every suggestion will be acknowledged immediately. Later the employe will be advised of the result of the study made of the suggestion; and if it is not adopted, the reasons why.

Communications to the Bureau will be treated as confidential; the employe's name will not be disclosed without his consent.

In addition to money awards and other forms of appropriate recognition for each suggestion adopted, "Special" cash prizes have been awarded for the best three suggestions adopted during each six months' period; a 1st "Special" prize of $100, 2nd prize $50, and 3rd prize $25. Twenty-four such "Special" prizes to date have been awarded to Boiler Maker Helper, Brakeman, Clerks, Conductors, Crossing Watchman, Electricians, Enginemen, Fireman, Laborer, Machinists, Pipe Fitters, Store Attendant and Timer.

Forward Suggestions by Railroad Service Mail, or by United States Mail, to:

BUREAU OF NEW IDEAS, PENNA. R. R.

Room 1642 Broad Street Station Building, Philadelphia, Pa.

With each suggestion give your name, occupation, and place of employment; ALSO YOUR RESIDENCE ADDRESS so that our letters concerning your suggestion may be sent to you by U. S. Mail to your home.

Care should be taken to explain just what your idea is and how it is to work in practice and what you believe it may accomplish; also state, if you know, whether the plan or method is being used anywhere.

Any sketch or diagram furnished should be on a separate sheet of paper. It is preferred that a separate sheet of paper be used for each suggestion.

March 15, 1932

W. W. Atterbury
President

The Latest Poster Soliciting Suggestions

opportunities for observation and thought on which to develop constructive ideas, and the plan under which the Bureau is operated avoids any possible embarrassment to an employee submitting a suggestion that is found impracticable. The confidential nature of the employee's relationship with the Bureau accomplishes this latter. Many employees, who might hesitate to submit a suggestion to their immediate superiors, will deal with the Bureau since the name of the author is not revealed even to those officers to whom a copy of the suggestion is sent for consideration; an employee's name, whether or not his suggestion is adopted, is never disclosed by the Bureau unless his permission is obtained.

All new ideas are submitted in writing to the Bureau which is under the supervision of personnel department officers in the Pennsylvania general offices at Philadelphia. Because the employees are spread over such a wide territory, it was concluded that the "Suggestion Box" arrangement that has worked out satisfactorily in manufacturing plants would not be suitable.

When the suggestion is received in the Bureau it is recopied or rewritten to preclude any possible recognition of the author and submitted to the system officer of the department or departments involved, or, if it is a purely local suggestion, to the officers of the region involved.

Carrying out the confidential nature of the whole transaction, awards and special prizes for suggestions adopted are transmitted in cash by registered letter to the employees' home addresses. The awards are the payments made currently to individual employees as their suggestions are adopted; the special cash prizes are given at the close of each six-month period for each of the best three suggestions adopted during the period. The special cash prizes are given for those suggestions which embody the best combination of original thought, potential saving and improvement in methods. The first prize is $100, the second, $50, and the third, $25. Twenty-four such special prizes have been awarded thus

(Continued on page 877)

Signal Section Meets in Chicago

Highway crossing protection and economies effected by signaling installations among important subjects discussed

IMPROVEMENTS in highway crossing protection and the use of modern signaling facilities as a means of reducing operating expenses were two of the more important subjects discussed at the annual convention of the Signal Section, A.R.A., at the Hotel Stevens in Chicago, May 10 and 11. A. H. Rice, signal engineer of the Delaware & Hudson, presided as chairman, the convention being attended by 238 members. Reports of committees on Highway Crossing Protection and on the Economics of Signaling are abstracted here, while the remaining reports, which were of a more technical nature, are mentioned only briefly. At the close of the session on Wednesday, the secretary announced the election of officers for the coming year as follows: Chairman, H. H. Orr, superintendent signals and telegraph, Chicago & Eastern Illinois; first vice-chairman, J. E. Saunders, signal engineer, Delaware, Lackawanna & Western, and second vice-chairman, H. G. Morgan, signal engineer, Illinois Central.

Economic Benefits of Signaling

The report of the Committee on Economics of Signaling included statements of savings being effected by the consolidation of interlockings, installations of remote-control power switches, spring switches, centralized traffic control, highway crossing signals, etc., as well as calculations of the benefits derived from the elimination of train stops at automatic interlockings, at grade signals, at stop-and-proceed signals, and in train-control territory where no wayside signals are in service.

The report included detail statements as to the costs and savings effected by the consolidation of interlockings at eight points on several roads. In most of these cases the saving was made by eliminating the tower and one set of levermen and totaled from $5,000 to $6,000 annually, ranging from 23 to 101 per cent on the investment. For example, the report stated that whereas the switches and signals at "GS", east of Enola, Pa., on the Pennsylvania, were formerly controlled from a mechanical interlocking at that point; this plant was abandoned and the switches and signals are now remotely controlled from "DY" interlocking at the east end of Enola yard, 1.5 miles distant. About 95 freight trains are operated through this territory daily, of which an average of 35 are diverted. The cost of making the changes in interlocking was $17,000, including $8,000 charged to capital account and $9,000 to operating expense, including retirements. The saving effected annually in levermen's wages was $6,351, which represents a return of 70 per cent on the capital investment.

Summary of Results Included in Report of Economic Committee

Installations			Net saving per annum	Annual return on total cost*
Type	Number	Cost		
Interlocking consolidation	10	$343,380	$86,787	25%
Remote control and spring switches	3	41,705	14,945	36%
Electric lamps substituted for oil switch and signal lamps	3	9,442	4,160	44%
Interlocking, manually-operated, replaced by spring switches	2	9,620	11,112	116%
Highway grade crossing protection—watchmen replaced by flashing light signals	1	11,537	2,082	18%
Centralized traffic control	2	608,750	133,962	22%
Interlocking, automatic	51	361,776	297,081	82%
Totals	72	$1,386,210	$550,129	40%

* Over and above 6 per cent interest charges.

Use of Spring Switches

Three examples were given of the savings effected by installations of spring switches. For example, near Americus, Ga., on the Central of Georgia, where two single-track lines converge to form a double track, the two crossovers involved were formerly handled by switch tenders. By installing three spring switches and one power-operated switch machine, together with signals, the switch tenders and one operator were eliminated and all train movements are protected by signals. The improvements cost $10,829, of which $9,803 was chargeable to capital account and $1,026 to operating expenses. The increased cost of maintenance and clerical forces was $1,480 annually, which, subtracted from a saving of $8,242 in operator's wages, left $7,216 net annual saving, which represents a return of 74 per cent on the capital investment.

At Parkton, Ky., on the Louisville & Nashville, a mechanical interlocking at the end of double track was replaced by a spring switch. The improvements required a charge of $1,472 to capital account and $3,018 to operating expenses, including retirements. The saving in levermen's wages is $5,694 annually.

Elimination of Train Stops

This report included an extended discussion of the elimination of train stops at stop-and-proceed signals. In March, 1930, the Illinois Central modified Rule 282 on all divisions outside the Chicago terminals to read as follows: "D-282—On two or more tracks, trains may pass stop-and-proceed signals without stopping, proceeding at a speed of not exceeding 15 m.p.h." Results have been very satisfactory during the two years the arrangement has been in effect. Consideration was given to the extension of the above instructions to cover intermediate signals in absolute-permissive-block territory on single track but action was deferred to enable the instructions to be given a thorough test on multiple track.

The report also included a list of 25 roads which are using the tonnage sign to permit the elimination of train stops at stop-and-proceed signals on grades. The advantages, according to the report, are that "grade, or tonnage, signals eliminate unnecessary train stops and stop-and-proceed signals, increase track capacity on account of permitting closer following train movements, increase the average train speed due to the elimination of the unnecessary train stops, eliminate

the possibility of damaged equipment due to restarting of trains on heavy grades, avoid stopping trains where one or more busy streets or highways would be blocked, and avoid one stop at the approach signal in making a meet at a siding in some A. P. B. single-track territory."

Also, the report included an explanation as to the use of automatic train control with cab signals but without wayside signals, as a means of eliminating train stops, as in service on 356 miles of double-track

Economic Advantages of Automatic Interlockings

Railroad	Cost	Saving Per Year	Per cent Saving	Remarks
A. T. & S. F.....	$6,866	$4,898	71	Released three levermen.
A. T. & S. F.....	13,277	16,864	127	Eliminated over 9,280 train stops annually.
A. T. & S. F.....	8,703	15,088	173	Eliminated over 8,240 train stops annually.
B. & O. C. T.....	2,800	5,551	198	Released three switch tenders.
B. R. T.....	2,300	4,300	187	Released three levermen.
C. & A.....	10,487	3,000	28.6	Eliminated 6,000 train stops annually.
C. & E. I.....	11,600	12,000	103	Eliminated 18,000 train stops annually.
C. G. W.....	6,500	5,000	77	Replaces 16-lever mechanical plant.
C. M. St. P. & P.	6,000	4,200	70	Eliminated thousands of train stops annually.
C. R. I. & P.....	5,000	4,500	90	Released three levermen.
C. R. I. & P.....	5,500	4,500	82	Released three levermen.
L. & N.....	3,846	5,000	130	Replaced desk lever interlocking.
M. & St. L.....	10,000	5,333	53	Eliminated thousands of train stops.
N. Y. C.....	11,560	2,181	18.9	Replaced 20-lever mech. plant and released 3 levermen.
G. N.....	11,118	5,000	45	Replaced mechanical plant and released 3 levermen.
G. N.....	5,800	2,310	39.8	Eliminated train stops at junction.
T. & O. C.....	1,650	8,145	493	Replaced six flagmen.
Wabash	18,334	5,000	27	Released three levermen.

line on the Chicago & North Western, where an annual saving of $16,500 is effected by the elimination of train stops.

Centralized Control

Lantern slides were used to illustrate reports on three installations of centralized traffic control. On the 43-mile single-track installation on the Missouri Pacific, where approximately 48 trains are handled daily, an average of 4 train stops has been eliminated for each freight train, over 50 per cent of the meets being non-stop for both trains. The average freight train speed increased 47 per cent or from 13.7 to 20.2 m.p.h. The gross ton-miles per train-hour increased 57 per cent or from 47,745 to 74,740, the same locomotives being used. (See *Railway Age* for March 15, 1930, pg. 640.)

On the 29-mile single-track centralized control installation on the Pennsylvania, an average of 19 passenger and 11 freight trains are handled daily. The average freight-train speed was increased 87 per cent, or from 16.3 to 30.6 m.p.h. The number of gross ton-miles per train-hour increased 89 per cent, or from 45,709 to 85,558. The saving effected represents over 34 per cent on the investment and furthermore a second-tracking program in this territory, estimated to cost $3,750,000, has been indefinitely postponed as a result of the increased track capacity effected by the centralized control. (See *Railway Age* for January 24, 1931, pg. 232.)

The report on the replacement of oil semaphore lamps with electric lamps operated by primary battery showed that the Western Maryland had made such a change on 224 signals, thereby accomplishing a net annual saving of $2,035, which is at the rate of 44 per cent on the cost of the changes.

The report on automatic interlocking showed that 40 roads have installed a total of 243 such plants during the last 10 years. Several tables were shown, giving the costs, savings and number of train stops eliminated by representative plants, one of these tables being reproduced herewith.

Discussion

The report was presented by P. J. Schwendt (N.Y.C.) committee chairman, who introduced L. C. Walters, subcommittee chairman, and he presented the several reports on consolidation of interlockings and spring switches, adding a few explanations in each case. L. S. Werthmuller (M.P.) subcommittee chairman, presented the reports on centralized traffic control and explained the pictures which were thrown on the screen illustrating the different installations. In explaining the tables concerning automatic interlockings, Mr. Werthmuller stated that with over 310 automatic interlockings in service through which over 6,789 trains pass daily, to date only one accident has occurred that required an investigation of the Bureau of Safety. Mr. Schwendt then outlined the several conclusions which he presented for letter ballot for inclusion in the manual, adding in each case the percentage savings effected. Because A. H. Rudd (Penna.), W. H. Elliott (N.Y.C.), W. M. Vandersluis (I.C.) and G. H. Dryden (B.&O.) objected to the inclusion of the figures on percentage savings, Mr. Schwendt withdrew them and the conclusions were accepted for submission to letter ballot.

Report on Highway Crossing Protection

The report of the Committee on Highway Crossing Protection included an explanation of events leading up to the adoption of the new standards shown in bulletin No. 1 of the A.R.A. Joint Committee on Highway Crossing Protection. Continuing, the report gave an explanation of federal and state activities with reference to crossing protection, summarized as follows:

Federal aid will be granted for part payment of protective devices on federal-aid roads in states where it is the policy of the state to participate with the railroads in the cost. Michigan passed a law in 1931 providing that within a period of several years a cross-buck sign (and a sign showing the number of tracks if more than one) with black background and reflecting buttons, shall be installed on each side of all crossings, such signs to conform to a design prescribed by the state highway commissioner. The highway authorities are to furnish, renew and maintain the signs and the railroads are to pay one-half. * * * The Public Utilities Commission may, at its discretion, order the installation of a device to warn of the approach of a train, which shall be of the flashing-light type, equipped with a gong. Such signals shall shine in both directions along the highway, and shall be equipped with a reflecting button cross-buck sign, a sign indicating the number of tracks, and a "Stop on Red" sign. * * * The railroad is to pay one-half and the highway authorities one-half. The signals are to be maintained by the railroad at its own expense except that the highway authorities shall pay $10 per month to the railroad for each crossing protected by flashing-light signals. * * *

In Indiana a law was passed in March, 1931, authorizing the Public Service Commission to designate extra-hazardous crossings outside of cities and towns, giving it authority to order the installation of signs required by previous laws or other signs or safety devices which it may approve. The cost of procuring, transporting and installing such signs or other devices is to be paid in equal proportion by the State Highway Commission and the railroad affected.

On the principle that in some cases automatic signal protection would result in grade separation being made unnecessary, the State Highway Department of Montana has agreed to bear one-half the cost of installing highway grade crossing signals.

On November 10, 1931, the Public Service Commission (State Division, Department of Public Service) of New York state

issued an order, supplemental to one already in effect, which provides that signals erected on and after January 1, 1932, shall be of the flashing-light type, with lights shining in both directions along the highway, 20-in. backgrounds, and reflector signs reading "Stop on Red Signal." * * * Where there are two or more tracks, a reflector sign of the same type, indicating by numerals the number of tracks and the word "Tracks," is to be mounted immediately above the flashing lights. * * * Existing signals must be equipped with the "Stop on Red Signal" signs and with the number of tracks signs not later than January 1, 1934; must be repainted to conform with the requirements of the order not later than January 1, 1935, and must be equipped with the lights shining in both directions and made to comply with all the requirements of the order before January 1, 1937.* * *

Under agreement approved by the Public Service Commission of Pennsylvania, on August 8, 1927, the State Highway Department pays half the cost of installation of flashing-light signals at crossings of state highways; the railroads paying half the cost of approach signals where the flashing-light signals cannot be seen for 500 ft. * * * The highway department, in October, 1931, extended this division of cost to cover the erection of standard automatic flashing-signals at grade crossings located on State Aid highways if the entire project is located outside of borough or city limits.

Discussion

A. H. Rudd (Penna.), committee chairman, presented the report and in discussing the objections of the committee to the use of a sign indicating that a second train is coming, he explained that the editing committee had changed Item C, which should read "It (the device) provides another piece of apparatus which might fail when it was most needed." He read a comment on this item, received from H. E. Brashares (G.N.), as follows: "This criticism of the 'second train' sign by the committee is comical if not pathetic. They (the committee) use it as an argument against this sign but apparently cannot see its application to their approved standard, i.e., the wigwag and flashing lights."

Mr. Rudd replied to this comment to the effect that the Great Northern evidently favored the so-called Griswold signal, in which the disk assumes the Stop position by gravity, although the flashing lights do not. Continuing Mr. Rudd said that it was the thought of the committee in presenting his Item C, that if people were accusomed to seeing this illuminated sign (second train), it might be considered that only one train was coming, if it failed to light up. It is, therefore, better to depend on the instruction sign "Stop on Red Signal" and then educate the people as to the meaning of the signal.

Mr. Rudd then gave some more information regarding state and federal activities, bringing this part of the report up to date as follows:

The state of Pennsylvania will approve installations of the new standard flashing-light signal with changes, specifying in each case whether the Stop on Red Signal or STOP type of sign is required. On March 1, 1932, Canada rescinded its order of December 13, 1928, in which it approved as effective, plans and specifications for the Farnsworth automatic crossing gate. In Montana, contracts have been executed lately between the state highway officers and the Chicago, Milwaukee, St. Paul & Pacific, in which the state agrees to pay 56.6 per cent and the railroad 43.4 per cent of the cost of crossing signal protection. All projects where this division was agreed upon involved Federal aid. The highway commission does not approve center-of-street locations outside towns and cities. If the state of North Carolina orders signals installed, it pays one-half of the cost. In the state of New Jersey, orders have recently been made for installations of crossing signals under specifications which are practically the same as those of New York state. The state of Minnesota objects to the A.R.A. standards and feels that wigwag or flasher lights do not provide adequate protection in that they indicate safety in case of a failure. The state of Nevada has concurred with A.R.A. standards as shown in bulletin No. 1. In Nebraska the center-of-street location is illegal.

Other Reports

The Committee on Signaling Practice presented a report on the developments of train control and the requisites for centralized traffic control, automatic block signals and interlockings; a report also was given on reflecting devices as a substitute for oil or electric lights. Reports covering installations of reflecting devices as substitutes for switch lamps show that reflecting devices give indications equal to or better than oil lamps and are more dependable in locations exposed to high winds. Their visibility is satisfactory on tangents for distances up to 3,000 ft., but on curves the effective visibility distance is dependent upon the degree of curve, the total angle of refraction of such devices being approximately 65 deg. or 32½ deg. on each side of the axis of the lamp. Generally speaking, the results obtained from reflecting devices have been more satisfactory than from oil lamps on curves where tests have been made under similar conditions.

The Committee on Interlocking presented a new specification for an electro-pneumatic interlocking machine and two revised specifications on the installation of interlockings. The Committee on D-C. Automatic Block Signaling submitted a new set of requisites for d-c. automatic block signal circuits and a revised specification concerning a tractive-type d-c. neutral relay. Also, a report on condensation of moisture and formation of frost was presented.

The Committee on Instructions submitted instructions for the installation and maintenance of storage batteries, and for maintaining and testing interlocking plants. As a part of the present year's work, the committee presented Chapter XVII—Mechanical Interlocking and Electro-Mechanical Interlocking, and also Chapter XX—Interlocking Circuits, to be included in the book "Principles and Practices of American Signaling."

The Committee on Designs presented a progress report on specifications for lenses and similar devices used in signaling. The Committee on Contracts and Performance Records presented three forms, one for a signal performance report, one for automatic train control performance report and one for a signal interruption chart.

The Committee on A-C. Block Signaling presented a revised specification for impedance bonds and four specifications for impregnating compounds and insulating varnishes. The Committee on Overhead and Underground Lines presented eight specifications concerning bond wires, insulating tape, aerial braided cable, armored submarine cable, lead-covered cable, and parkway cable. The Committee on Chemicals presented a specification on suspension-type porcelain insulators.

"COME TO VIRGINIA," the passenger advertising folder of the Norfolk & Western, comes out with a gay four-color cover, and its 36 well-written pages are crowded with photographic illustrations, many of them new. Included in them are some really informative views of the Natural Bridge and its surroundings. Virginia Beach and Ocean View retain their prominent place among the resorts.

Type P5 Electric Passenger Locomotive

Pennsylvania Develops Three Types of Electric Locomotives*

Motive power units can be used singly or in combination to provide power and speed requirements of all classes of trains

By J. V. B. Duer

Electrical Engineer, Pennsylvania Railroad

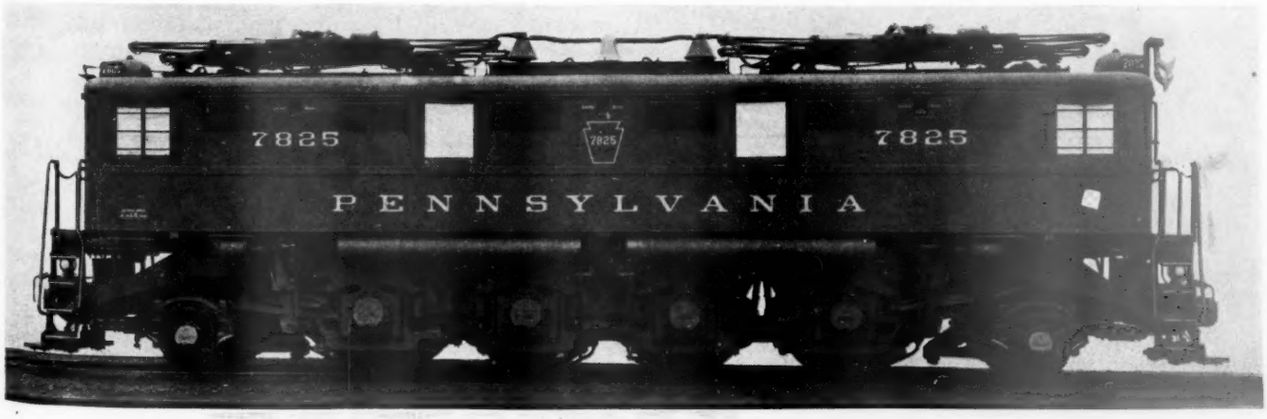
IN 1915, at the time the single-phase alternating current system was installed on the main line of the Pennsylvania Railroad between Paoli, Pa., and Broad Street Terminal in Philadelphia, it became evident that the type or types of single-phase electric locomotives best suited for our railroad would have to be determined, as the electric locomotives which had been developed previously for our use were designed primarily for operation in our New York Terminal area.

The resulting engineering studies led in 1924 to the production of an electric locomotive known as the L5 type, designed as a general utility locomotive for the railroad as a whole, and so arranged that it could be used in either passenger or freight service by a modification in the gear ratio, and on alternating or direct current by modifications in the control. This locomotive was subjected to extensive tests and a number of the locomotives were then built and placed in service in our New York electrified territory. They were designed with single-phase commutating type motors, and control suitable for operation on direct current. At the same time, another was equipped with alternating current control and placed in service at Philadelphia.

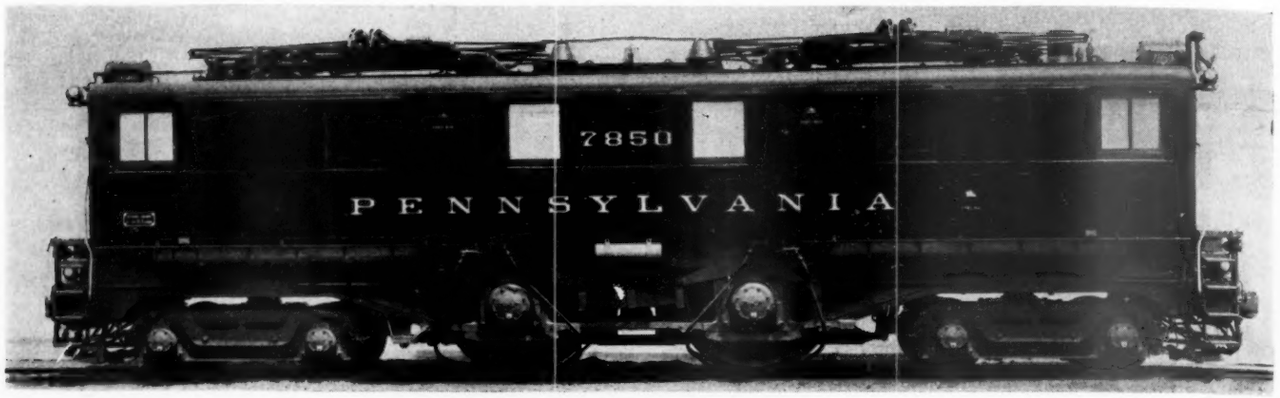
Advance in single-phase motor design has since made possible the development of a simpler, lighter and cheaper single-phase locomotive, and it is my purpose in this paper to discuss some passenger locomotives of this type to be used on the Pennsylvania Railroad for the electrification now under construction between New York and Washington.

In Pennsylvania Railroad nomenclature the electric locomotives to be used in our New York-Washington service are designated as follows: Class P5 electric locomotive, heavy duty passenger service; class O1 elec-

* Paper presented on April 19, 1932, before the Transportation Group, Metropolitan Section, American Institute of Electrical Engineers.



Type L6 Electric Freight Locomotive



Type O1 Electric Passenger Locomotive

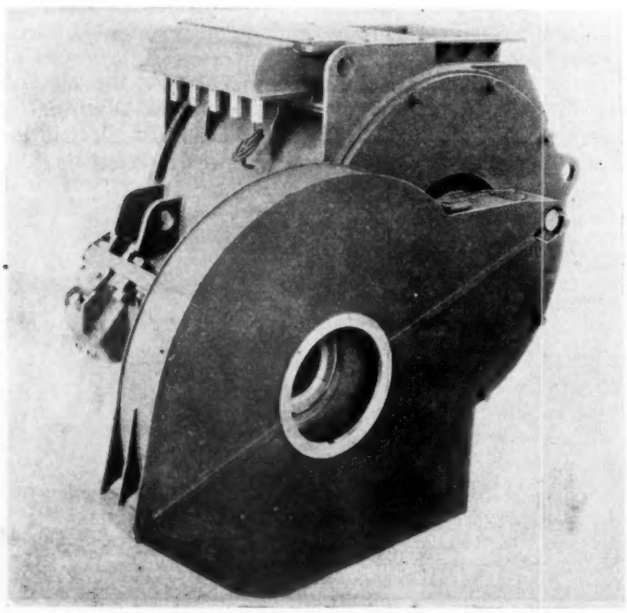
tric locomotive, light duty passenger service; class L6 electric locomotive, freight service; and class B1 electric locomotive, switcher service.

The class B1 switcher, developed some years ago, has been built in quantities for our service and is giving satisfactory performance when operating on alternating current on the Long Island Railroad and the Pennsylvania Railroad, and also when operating on direct current on the Pennsylvania Railroad; it will be built with slight modifications for extensions to our switching service.

The P5, O1, and L6 locomotives are those recently designed and the following description is of the P5 locomotive. This will bring out the more important questions affecting the design of all three classes of locomotives and by reference to the other two classes the relationship between the three will be shown.

Locomotive Design

The design of the P5 locomotive was preceded by the decision as to several important questions, as follows: First, the maximum weight per pair of drivers, as well as the total weight of the locomotive to be permitted. Second, the selection of the motors and other electrical equipment with a view to taking full advantage of this weight per pair of drivers. Third, the total horsepower and tractive force of the locomotive. Fourth, the maximum allowable speed. Fifth, the adhesion factors upon which accelerating rates should be based.



Axle-Hung Motor for L6d Locomotive Showing Gear Case

The decisions in regard to these questions were as follows:

Weight on Drivers—It was decided after study and review of our steam locomotive practice to work to a weight per pair of drivers of 75,000 lb., and the total weight of locomotive of 375,000 lb. In deciding this, consideration was given to the mechanical structure of the locomotive, the speed at which it was to operate, as well as the structures and physical characteristics of the railroad over which the locomotive would be used.

Selection of Electrical Equipment—Single-phase commutator-type motors were selected, and in this selection, and in that of the other electrical equipment, consideration was given to the best method of taking full advantage of the permissible weight on drivers, both as to horsepower and tractive force, to secure a proper balance between these factors and the capacity of the electrical equipment.

Horsepower and Tractive Force—It was felt that if the general characteristics of a steam locomotive which is at present handling our passenger trains could be duplicated or bettered, the electric passenger locomotive thus produced would provide a satisfactory unit for handling these through passenger trains.

Maximum Speed—To provide adequate operating tolerances over our present operating speeds, while at the same time permitting increased operating speeds in the future should conditions seem to warrant such increase in speeds, a maximum operating speed of 90 miles per hour was selected.

Adhesion Factors—It was felt that conservative design required the use of an adhesion factor of 25 per cent of the weight on drivers, as our experience with electric locomotives in the past indicated that there should be no trouble in reaching this adhesion factor under almost any normal operating conditions.

With these questions decided, the design of the locomotive was started.

In our earlier locomotives of both alternating and direct-current types, for various reasons we had used jack shaft and side rods as a means of transferring the motor horsepower to the driving wheels.

In our direct-current locomotives this was done to secure a smooth-riding vehicle as well as to concentrate the motor horsepower in a small number of large motors. In our alternating current locomotives, similar construction was used to permit the use of the minimum number of large motors, as it was not possible when these locomotives were designed to place between the driving wheels sufficient motor capacity to handle

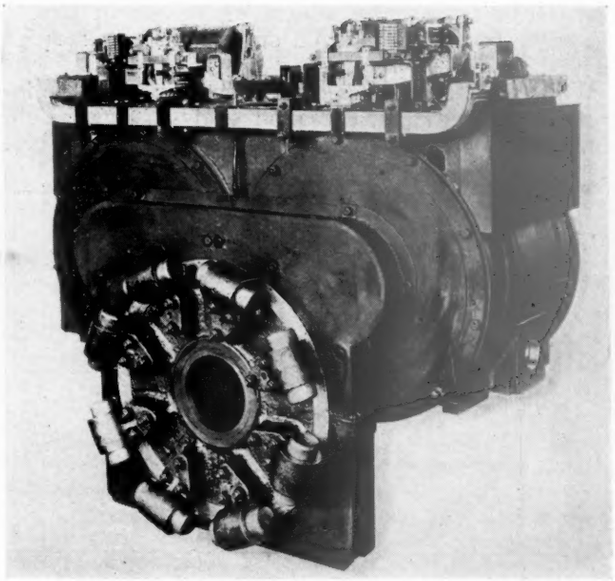
the tractive forces made available by the weights on drivers permitted. Developments in single-phase motors, however, now permit the installation between the driving wheels of sufficient motor capacity effectively to handle the maximum weight per pair of drivers; jack shafts and side rods are thus no longer necessary and it is possible to design a maximum driving unit of sufficient capacity to develop the tractive force available with the allowable weight per driving axle.

Among the developments which made possible the increase in motor capacity referred to above, may be mentioned an increase in permissible peripheral speed of both armature conductors and commutator. This increase in permissible peripheral speed resulted from improvements in the mechanical design of both armature and commutator, the use of roller bearings for the armature, and improved mechanical design of gears and pinions. Another development which contributed to the increase in capacity is an increase in the efficiency of forced motor ventilation which has followed a detailed study of air distribution through the various air passages in motor windings.

The sustained available and controllable continuous output of the P5 locomotive over wide ranges of speed and with varying line regulation made possible by the use of this motor and a transformer with suitably selected transformer taps, is an outstanding characteristic of this locomotive which should be pointed out.

With the selection of this driving unit as a base, it is also possible to design locomotives of different classes for freight and passenger service each with a suitable multiple of these driving units assembled in combination with suitable idle truck units. Thus in the P5 locomotive, a motor unit consisting of two armatures and stators in a single frame was selected as the motive power for a pair of drivers, the armatures of these motors driving the wheels through an adaptation of the well-known quill drive. In the O1 locomotive, identical units are used with a lesser number of drivers. In the L6 locomotive, single motors are mounted in a frame suitable for axle mounting, and drive the wheels by means of conventional gear reduction arrangements.

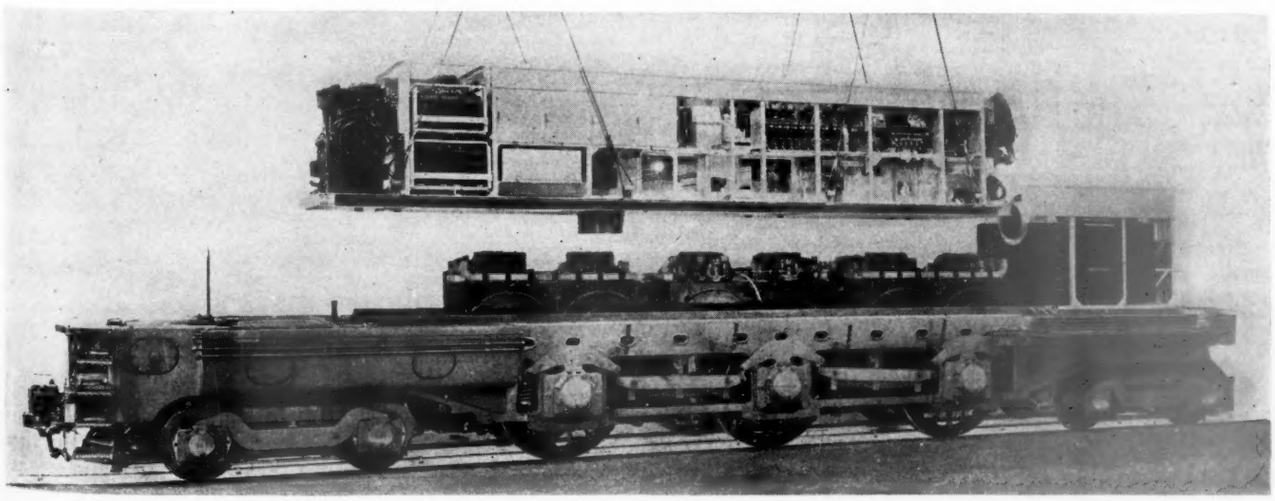
As the design of the P5 locomotive progressed it was found that three pairs of drivers mounted in a single frame, and each pair of drivers equipped with the motor unit described above, and with a four-wheel truck at either end of the locomotive, provided a locomotive of somewhat greater capacity than our present through passenger locomotive of the "Pacific" type. It was also found that an assembly of two sets of twin motors, with two pairs of drivers and a four-wheel truck at either end, railroad classification O1, provided a locomotive of somewhat greater capacity than our through passenger locomotive of the "Atlantic" type, and that an assembly of four pairs of drivers, with approximately 60,000 pounds per pair, and a single armature driving each pair of drivers through gears and pinions, with a two wheel truck at either end of the locomotive, provided a somewhat greater capacity than our "Mikado" locomotives used in freight service.



Twin Motor Assembly for P5a Locomotive—Pinion End Showing Quill Drive

Furthermore, these designs permitted great flexibility of motive power selection. Thus with an 01 locomotive 2500 horsepower is available, with two pairs of drivers; with the P5 locomotive, 3,750 horsepower is available with three pairs of drivers: with two O1 locomotives, 5000 horsepower is available with four pairs of drivers; with an O1 and a P5 locomotive, 6250 horsepower is available; and with two P5 locomotives, 7500 horsepower is available.

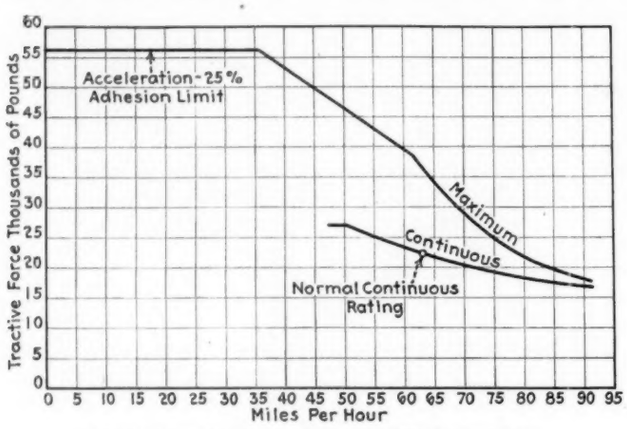
Thus it is possible to increase locomotive capacity in steps of one pair of drivers, or 1250 horsepower, and a



Assembled Apparatus Deck Being Lowered on Assembled Chassis

unit can be selected for almost any weight or size of passenger train now used on our railroad or likely to be used in the near future.

While the freight locomotive's capacity cannot be increased in such steps, a careful study of our freight service has indicated that the unit selected is the best



Speed-Tractive-Force Curve of P5a Locomotive

all-around unit for handling our freight trains and that the steps in which the capacity can be increased are sufficiently flexible.

The Class O1 locomotive is in all respects similar to the P5 except that it has two driving axles instead of three, and is consequently of smaller capacity. The equipment in the two locomotives is similar in every respect except that the transformer is of the smaller capacity to suit the smaller motor capacity.

The Class L6 freight locomotive has four driving units with a two wheel truck at either end. Each driving unit carries but one motor armature with its frame, and each motor is axle-borne much in the manner used for years on trolley cars. The single motors of the L6 locomotive, however, are identical except for the frame, end housings, and pinion-end bearings, with the single motors of the twins of the passenger locomotives. In the L6 locomotive the cab and apparatus deck is of steel, as weight restrictions do not make the use of aluminum necessary.

These motors have been nominally rated continuously at 625 horsepower per armature at the locomotive driver rims, and this gives a nominal continuous rating of the three classes of locomotives as follows:

Class	P5.....	3750 b.h.p.	63. m.p.h.	22,300 lb. T.f.
	O1.....	2500 b.h.p.	63. m.p.h.	14,900 lb. T.f.
	L6.....	2500 b.h.p.	37.8 m.p.h.	24,800 lb. T.f.

The rating of the L6 locomotive when equipped with gear ratio is for 54 miles an hour maximum speed, and of the P5 and O1 locomotives when geared for a maximum speed of 90 miles per hour.

Interchangeable Parts Simplify Maintenance

Experience with construction and maintenance has indicated that in any class of electric locomotive, any part should be readily removable and replaceable, and that insofar as possible, all parts should be interchangeable between individual locomotives of the same class. The desirability of still further applying this principle as between different classes of electric locomotives is evident.

With the cooperation of the electrical manufacturing companies this has been accomplished in the P5 locomotive. Any unit or part, armature, motor, brushholder, transformer or control unit will fit into and perform properly in any locomotive assembly, regardless of the manufacture of other parts in that assembly. Close coordination between the manufacturers and the railroad in the development of designs, checking and approval of drawings, and other detail was necessary to accomplish this.

This principle has been further developed in the locomotive assemblies in that each complete locomotive assembly consists of three units, a chassis unit, a deck unit and a cab unit.

The chassis unit consists of the drivers, trucks, main frame, spring rigging, brake rigging, motors, flexible drives, main transformer, and train heating boiler, together with the necessary water and oil storage reservoirs and air, oil and water piping.

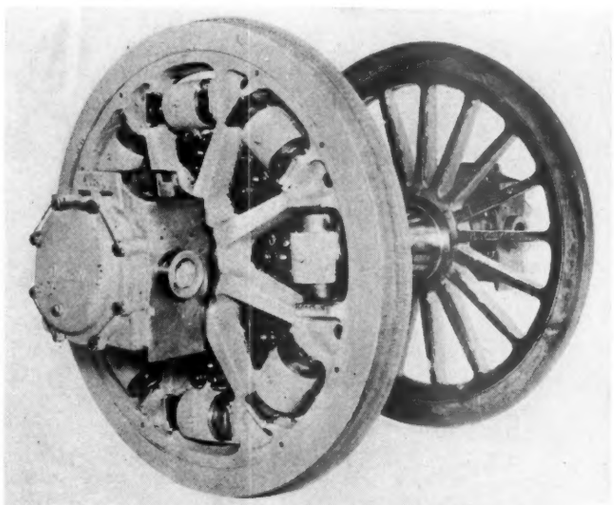
The foundation for this chassis unit is a single steel casting into which are cast the oil and water reservoirs of the oil-fired steam boiler, as well as the air reservoirs for the compressed air for the air brake and control systems. At each end of this steel casting is a four-wheel engine truck consisting of a single cast steel frame, a steel bolster casting, and the necessary spring and brake rigging. The driving wheels, truck wheels and motor armatures are all mounted in anti-friction bearings. This type of bearing has been used extensively for passenger car journals, and for traction motor bearings on our railroad and its use has now been extended to the driving wheel journals, truck wheel journals and motor armature bearings of our electric locomotives, and it is anticipated that bearing trouble will be practically eliminated and locomotive maintenance materially decreased by the use of these bearings.

The deck unit carries the main control groups, air compressor, miscellaneous items, main wiring, and most of the control wiring.

The foundation for this unit is a structural aluminum frame-work upon which the electrical equipment is assembled and wired up; the completed unit is then ready for mounting on the chassis unit.

The cab unit forms a weatherproof housing for the locomotive crew and apparatus.

The foundation for this unit is an aluminum cab structure divided into three compartments, a cab for



Driving Wheel Assembly for P5a Locomotive

the locomotive enginemen at either end, and a central compartment which houses the apparatus deck, when both the apparatus deck and cab are mounted on the chassis. It also houses the heating boiler and main transformer. This cab in addition to forming a housing as above referred to, contains the master controllers

and engineer's brake valves, the lighting and its wiring, some of the control wiring, the bells, whistles, headlights, sanders, and pantographs, as well as the louvre structure for admitting ventilating air to the motor and transformer blowers. It may be assembled as a unit, wired and equipped with apparatus and then mounted as a housing on the chassis unit, enclosing the deck unit.

Each of these three units of a locomotive may be assembled independently of the other units, and the completed units may then be assembled into a complete locomotive. Parts, such as a pair of drivers, with the drive and motors, a truck, a control unit, etc., may be removed and replaced with a minimum of disturbance to the rest of the locomotive.

The interchangeability of electrical parts on the three classes of locomotives is practically complete. The unit switches, master controllers, air compressors and motors, pantographs, motor-driven blowers for motor ventilation, and relay systems are identical. The preventive coils and transformers are identical on the O1 and L6 locomotives, but on the P5 locomotive are larger because of the greater capacity required.

Although the assembled motors on the O1 and P5 locomotives are of the twin-armature, frame-supported type and those on the L6 locomotives are of the conventional single armature axle-supported type, the individual parts of the motors, including armatures and stators, are identical except that a larger pinion bearing is used in the axle-supported motor to take care of the higher duty required by the freight gearing. The stators may be pressed into or out of either type of frame.

The mechanical parts of the O1 and P5 locomotives are interchangeable to a large extent; the driving wheel assemblies, including the bearings are, the same; truck assemblies are the same, and many parts of the spring and equalizing rigging as well as many parts of the brake rigging are identical. In addition, many of the parts used to make up the apparatus deck and cab structure are the same.

Every effort was made to insure that each piece of apparatus is readily accessible for inspection and readily removable for repair, so that a locomotive may have a defective piece of apparatus replaced and the locomotive returned to service in the minimum amount of time. For this purpose hatches are provided in the roof of all three classes of locomotives. These hatches are readily removable and are so arranged that any piece of apparatus inside the cab may be removed through one of the hatches for repair or replacement.

A complete driving wheel assembly, including the motors, may be dropped from the frame in the repair shop and replaced in a relatively short time, thus making all electrical parts of the locomotive readily accessible and renewable either from above or below. In addition to this, each piece of apparatus inside the cab may be inspected from the interior of the cab, and the commutators and brushholders of the main motors may be inspected from the inspection pit.

For handling the large quantity of ventilating air necessary for cooling the motors and transformers, louvres are provided in the sides of the cabs which may be opened or closed, depending on the weather conditions. These louvres are so designed and constructed that screening devices may be applied to the louvres if further operating experience indicates this to be desirable.

The type of drive to be used between the pinion-driven gear of the armature and the driving wheel was the subject of much detailed study and analysis, and several types of drives were built and placed in service and on test. This test is still proceeding and final decision on this question will follow at a later date. The first 90 passenger locomotives built will be equipped with the cup drive illustrated. This drive so far has given excellent results in service. In the freight locomotives, the conventional arrangement of pinion and flexible gear is used.

It has been our practice for some years to omit the use of a current rupturing device between the pantograph on an electric locomotive and the primary of the main transformer and to substitute in its place a device known as a pantograph lowering relay. This is so connected as to use the substation circuit breakers to open high tension short circuits, grounds, or overloads, on the locomotive. In the P5, L6 and O1 locomotives this device has been supplemented by a grounding device which functions automatically under transformer short circuit or overload conditions to ground the pantograph, thus opening the sub-station circuit breakers after which the pantograph is automatically lowered and locked.

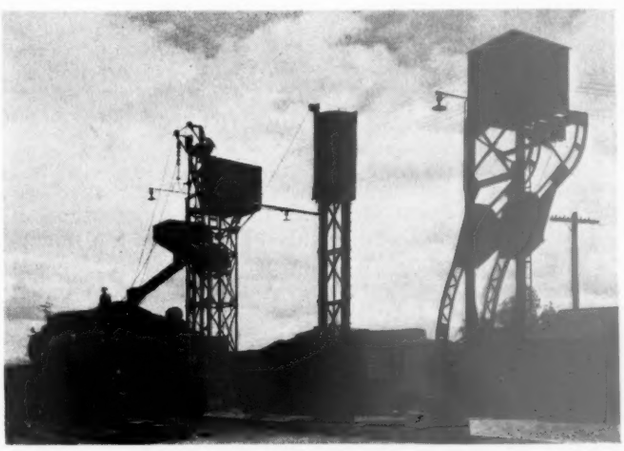
Protection against motor overload in these locomotives is provided by relay devices, thus permitting the maximum advantage to be taken of the tractive force made available by driving wheel adhesion, while at the same time affording protection for the motors should this adhesion exceed normal values by reason of the application of sand or mis-handling of the equipment.

This relay protection is also interlinked with anti-wheel slip protection which insures that driving wheel slippage is brought to the engineman's attention if he does not otherwise detect it.

A Compact Coal and Cinder Plant

AN interesting combination of an engine coaler and sander, and a cinder hoist, for the purpose of providing complete locomotive service facilities at a minimum outlay, has been installed on the Atchison, Topeka & Santa Fe at Hurley, N. M. It consists of a locomotive engine coaler and a cinder hoist located 60 ft. center to center in the space between the track used by locomotives and another provided for coal and cinder cars, with an elevated dry sand storage tank supported on a steel bent midway between the two.

The locomotive coaler, which is served by a 50-ton track hopper, is equipped with a 1¼ ton skip that is



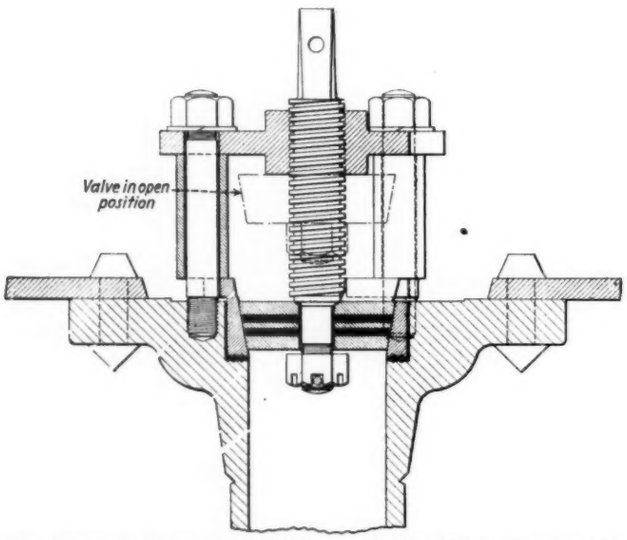
The Engine Coaler, Sander and Cinder Hoist at Hurley, N. M.

electrically operated to give a rated delivery capacity of 60 tons of coal per hour. The plant is equipped for full automatic continuous push-button control from the top of the tender or from the ground, for both starting and stopping. The cinder plant, which is designed to serve a shallow pit under the engine track, is equipped with a bucket of 50 cu. ft. capacity that is operated by an electric hoist equipped for semi-automatic control. Owing to the fact that the coal and sand plants are located close together, coal cars dumped over the track hopper can readily be moved into position for the loading of cinders.

In addition to the elevated dry sand bin, which has a capacity of 5 cu. yd., the sanding plant includes a wooden bin with a capacity of 70 tons for the ground storage of wet sand, a Santa Fe drier stove, and a suitably housed air compressor to supply air for the delivery of the dry sand. The equipment in this installation was furnished and erected by Fairbanks, Morse & Co., Chicago.

Bottom Outlet Valve for Tank Cars

A BOTTOM outlet valve for tank cars which utilizes both steel and resilient material to seal the outlet opening against a metal seat has been developed by the General American Tank Car Corporation, Chicago. This valve, which is known as the Pierce resilient seated outlet valve, has been tested and approved for service by the Tank Car Committee of the Mechanical Division, American Railway Association.



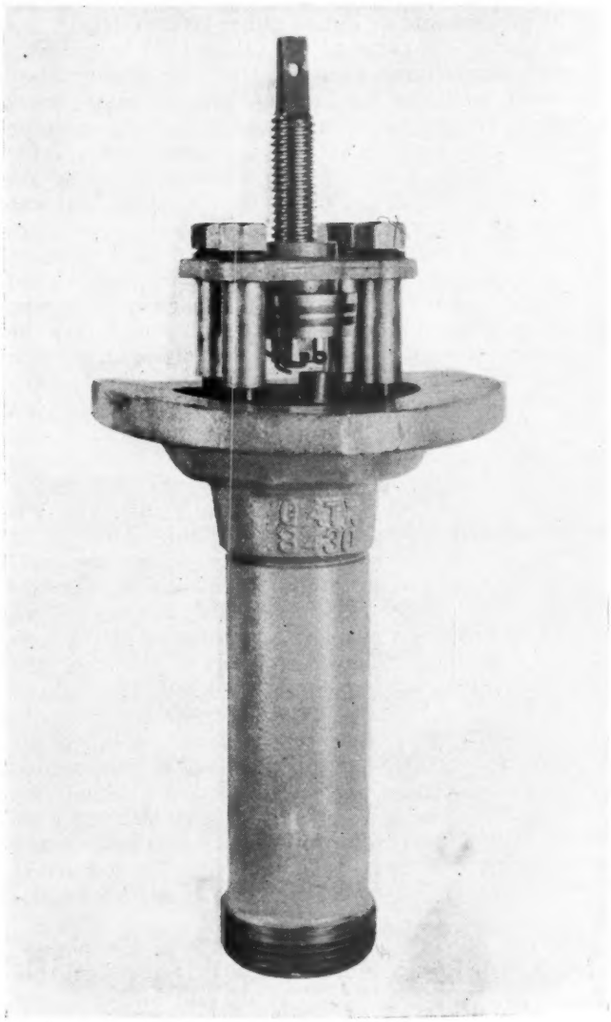
The Pierce Resilient Seated Bottom Outlet Valve—Patent Has Been Applied For

The construction of the valve will be readily understood by an inspection of the drawing which shows a cross-section through the valve and the bottom outlet leg. In applying the valve to existing tank cars or utilizing existing outlet legs, the recess is machined in the outlet casting to receive the bronze seat for the Pierce valve. The valve seat is sealed in the outlet by the use of a gasket at the bottom of the recess and is held in place by sleeves which are slipped over the studs and rest on lugs cast on the top of the valve seat. The cross into which the valve stem is threaded rests on top of the sleeves and the entire assembly is secured by nuts and lock washers on the studs.

The valve itself is made of three stainless-steel discs which are separated by two discs of a resilient material resembling rubber in its mechanical properties, but immune to the action of hydro-carbon oils. The steel discs are machined on a mandrel on which they are mounted with a separation 1/16 in. less than the normal thickness of the resilient discs to be used between them. The circumference is then finished to fit the taper of the bronze seat.

In closing the valve the bottom disc first seats and the discs of the resilient material are then successively compressed by 1/16 in. before the other two metal discs are brought to a seat. The action of the valve in closing tends to clear the seat of dirt. However, any slight obstruction which prevents one of the discs from tightly seating does not interfere with the seating of the others since the resilient material will compensate for the relative lack of alinement between the steel discs. Except for such conditions, the compression of the resilient material is definitely limited to 1/16 in. on each disc and it cannot fail by crushing.

Since the valve is not guided by wings, it offers an unobstructed passage through the outlet leg when in the open position. Tests indicate that the new 4-in. valve has a capacity in excess of 6-in. wing valves.



The Valve Assembled in the Outlet Leg

Six-Hour Day Investigation

Railway witnesses show adoption of six-hour day would increase payroll over $600,000,000

WASHINGTON, D. C.

DETAILED estimates of the increase in payroll expense that would result from the application of a six-hour day in railroad service have been placed before Division 6 of the Interstate Commerce Commission during the past week at the hearing in connection with the commission's investigation, under a Congressional resolution, of the effect of the application of the principle of a six-hour day. On the basis of 1930 experience the total increase is placed at over $600,000,000 a year, or 25 per cent.

The railroad exhibits were based on actual studies made by the various roads of the changes in number, hours, and compensation of the various groups of employees, on the basis of instructions to ascertain the changes that would be required if a six-hour day were to be applied at once, in the most economical manner, to the existing service. Railway officers representing the eastern, southeastern and western roads submitted such exhibits and explained the basis on which they were prepared, after which they were questioned by Commissioners Eastman and McManamy and by Donald R. Richberg, counsel for the railway labor organizations.

While most of the witnesses said it would be feasible to apply a basic eight-hour day without change in operating methods or service to the public if the cost could be disregarded, they testified that the increase in expense would be very large. In many instances, they said, it would be impossible to shorten the day's work of certain employees but it would be necessary to pay more overtime, either at time-and-one-half or pro rata rates. It was also pointed out that under present conditions a six-hour day in many instances would not give employment to more men but would increase the opportunities for employment to men now only on part time or on the extra lists. It was also shown that a large proportion of train-service employees now earn a day's pay in six hours or even less and that passenger engineers and firemen are on a basic five-hour day, or 20-miles-an-hour speed basis.

Eastman Asks About Possibility of Changes in Rules

Commissioner Eastman asked many of the witnesses whether it would not be possible to work out some modification of the present mileage or speed-basis rules in view of the increases in train speed, in order to effect economies to offset the cost of the higher pay per hour, but the invariable reply was to the effect that such questions should be addressed to the labor side, as the railroad managements have for years sought to modify many of the rules. One witness said the railroads could draft changes in the rules but he could not say the employees would accept them.

A summary statement, based on the detailed statistics and exhibits introduced and analyzed by other witnesses was made by Julius H. Parmelee, director of the Bureau of Railway Economics, accompanied by a review of the trend of railway operations and capital expenditures in recent years. Dr. Parmelee said in part:

Total compensation paid to railway employees during the year 1930 amounted to $2,590,000,000. This includes all employees of railways of Class I, including large switching and terminal companies, and the total amount includes salaries and wages charged to capital accounts, as well as those charged to operating expenses. In other words, it covers the total payroll of the year 1930.

The information shown on the various exhibits indicates that the railways in 1930 would have had a larger payroll by 25.83 per cent had the six-hour day principle been effective throughout that year in their operations. The total amount by which the payroll would have increased under six-hour conditions is $669,153,000. In order to indicate the effect of such an increase in labor costs on the financial results of railway operations, it is necessary first to exclude switching and terminal companies. Payroll charges to capital are next excluded, not because those payments do not actually form a part of the payroll, but because the effect of such payments on the income account is indirect rather than direct.

In setting up this exhibit, the same percentage of increase in compensation of employees, due to application of the six-hour day, has been used as that already developed for 1930, namely, 25.83 per cent. This increase was applied for each of the five years, and the net effect on net railway operating income and on net income after fixed charges was thus ascertained. The exhibit excludes large switching and terminal companies, and deals with compensation charged to operating expenses only.

The increase in total payroll in 1930, due to the six-hour day, has already been stated as $669,153,000. Excluding the large switching and terminal companies, and confining the figures to that portion of the payroll charged to operating expenses, the payroll charges for railways of Class I in 1930 amount to $611,291,000. Had the six-hour day been in effect in 1930, the net railway operating income and the net income after fixed charges of railways of Class I in 1930 would have been reduced by this amount, and would have been as follows:

	Net railway operating income	Net income (after fixed charges)
Actual	$868,879,000	$523,907,000
Added expense of six-hour day	611,291,000	611,291,000
Effect of six-hour day	$257,588,000	Def. $87,384,000

A similar set of calculations applied to the actual results of 1931 reduced the net railway operating income of that year to less than $25,000,000, and would leave the railways with more than three hundred and sixty millions of net deficit after fixed charges.

I have thus far applied the effect of the six-hour principle to the financial results of railway operation during two lean years, 1930 and 1931. To indicate what the effect would have been in any one of the past five years, the exhibit has been broadened to include each of the years from 1927 to 1931, inclusive.

In 1929, the best year of the five, the exhibit shows that the application of the six-hour day would have reduced net railway operating income by $691,000,000, or 55.2 per cent, while net income after fixed charges would have declined by 77.0 per cent to $206,000,000. The year 1928 was the second best year of the five. In that year the exhibit shows that the application of the six-hour day would have reduced net railway operating income by $679,000,000, or 57.9 per cent. Net income after fixed charges would have declined by 86.3 per cent to $107,000,000. The third best year of the five was 1927. Net railway operating income under the application of the six-hour day in that year, according to the exhibit, would have declined by $695,000,000, or 65.1 per cent, while the net income after fixed charges would have been wiped out and replaced by a net deficit of $22,000,000.

Summarizing, this exhibit indicates that the financial effect of a six-hour day during this five-year period would have been a reduction in net railway operating income ranging from a minimum of 55.2 per cent in 1929 to a maximum of 95.5 per cent in 1931. In three of the five years, net income after fixed charges would have been turned into a net deficit, and the percentage of decline in net income would have ranged from a minimum of 77.0 per cent in 1929 to a maximum of 355.7 per cent in 1931.

Salaries and wages absorbed slightly more than 44 cents of each dollar of total operating revenues during the years 1922 to 1924, showed a gradual decline to 1926, ranged between 43 and 44 cents per dollar in 1927 and 1928, declined again to 42.6 cents in 1929, then showed a rising tendency to 46.4 cents per dollar in 1931. This percentage for 1931 is the highest for any year during the ten-year period. Conversely, net railway operating income in 1931 was relatively the smallest of any of the ten years. In other words, salaries and wages in 1931 absorbed 46.4 cents out of every dollar of revenues, while only 12.6 cents remained for fixed charges and other capital requirements.

Testimony for Eastern Roads

J. F. Henry, superintendent of the Long Island, presented an exhibit combining the results of a study made by 32 eastern roads based on the operation of one representative division for each road for a week, for employees in the various classes of train and yard service. He testified, for instance, that the engineer on a local freight train on his road who now receives $8.65 for ten hours work, would, if a six-hour day were placed in effect, receive $12.97 for the same work, or an increase of 50 per cent in compensation. He added that a yard engineer who now receives $7.57 a day would, if a six-hour day were placed into effect, be paid $11.35 for the same work.

Mr. Henry further told the commission that engineers and firemen in through passenger service are now paid on a speed basis which in effect gives them a five-hour day, while conductors and trainmen in the same service are on a seven and one-half hour day basis. For all excess hours they receive additional pay at one-eighth of the daily rate. If a six-hour day were placed into effect, overtime in passenger service would be at one-sixth of the daily rate. Mr. Henry said that the application of a six-hour day in short turn-around and suburban passenger service would necessitate an increase of more than 28 per cent in the number of railroad employees in the Eastern region and an increase of more than 36 per cent in the amount of compensation paid for that service.

C. A. Gill, superintendent of motive power, eastern lines, Baltimore & Ohio, submitted an exhibit showing the effect of the application of a six-hour day to shop forces in eastern territory. Because of his recent experience in Russia, Commissioner Eastman asked him what was the basic day for Russian railway employees. Mr. Gill said they work seven hours a day for five days, then take a day of rest and work five days more, paying no attention to Sundays. When Commissioner Eastman suggested that "we can now come back from Russia" one of the railway counsel asked "how can we do that in this proceeding?" When Commissioner Eastman asked his view as to whether it would be possible to obtain more efficient work from men working six hours a day instead of eight, Mr. Gill said he thought "we are now getting about all we can out of the human element" and that the principal opportunities for increased efficiency now lie in improved equipment or organization. He said there would be some difference in efficiency as between a short period and a long one, such as sixteen hours, but thought there would not be much between six and eight hours. Mr. Richberg asked if the increased use of machinery does not impose a greater strain on the workman. Mr. Gill replied that the more modern machinery caused less strain than more inefficient machinery and referred to some equipment that is operated merely by pushing a push-button.

E. J. McClees, secretary of the Bureau of Information of the Eastern Railways, submitted an exhibit comparing the experience in train service on 36 eastern roads for a test week in August under the present bases of payment with the results to be expected under a six-hour day basis. This showed, for example, that whereas over-time occurred on 41.4 per cent of the trips there would be overtime on 65.1 per cent of the trips on a six-hour basis. The total increase in compensation was shown as 24.2 per cent.

F. R. Gerard, superintendent of the Philadelphia division of the Pennsylvania, introduced and described exhibits showing the application of a six-hour day to the operations on that division for a two-week period in April, 1932, showing an increase of 8.1 per cent in the number of employees and an increase of 18.7 per cent in the compensation. He pointed out that the increase in the number was so small because many of the men are now working only three days a week and that there are a large number of men on the extra lists who would be given increased employment before additional men were taken on. He said that the Enola yard could be operated under present conditions on three six-hour shifts instead of three eight-hour shifts but that this could not be done under normal conditions. He expressed the opinion that the effects of the introduction of a six-hour day would be similar to those that followed the enactment of the Adamson law, but he said they are still a matter of debate and that the chief effect of that law was an increase in operating cost. He said it resulted in an increase in employees for a time but that after 1920 the number was gradually reduced, largely as the result of improved equipment and labor-saving devices. In many instances, he said, a six-hour day could make no change in the number of employees because of the nature of the service; it would merely result in the payment of more overtime.

P. T. White, assistant general manager of the Cleveland, Cincinnati, Chicago & St. Louis, presented an exhibit showing the effect of applying a basic six-hour day on the number of employees, man-hours, and compensation of all employees affected in the operation of the St. Louis division and the Indianapolis terminal division of that road. This showed for the St. Louis division a 20 per cent increase in the number, a 4 per cent decrease in the number of hours worked, and a 26.2 per cent increase in compensation. For the Indianapolis terminal division it showed an increase of 28.9 per cent in the number, a decrease of 0.1 per cent in the number of hours, and an increase of 31.9 per cent in compensation.

Southern Roads

C. D. Mackay, assistant to vice-president of the Southern, submitted a series of exhibits representing studies made on several of the southern roads. He pointed out that from the very nature of the railway service in many instances it would be necessary to pay additional overtime rather than put on additional men if a six-hour day were adopted, and also that whenever the wage cost per hour goes up it becomes possible to effect greater economies through the use of additional capital to provide labor-saving equipment. When Commissioner Eastman asked if the six-hour day could be applied so far as operating conditions and service are concerned, if the cost factor is disregarded, he replied in the affirmative but said that it would require additional overtime payments and probably bankrupt the railroads.

L. L. Morton, assistant general manager of the Louisville & Nashville, pointed out that a six-hour day basis in maintenance of way work would result in more emergency work being performed on an overtime

basis. Other witnesses for the southeastern roads were J. A. Jones, general superintendent of telegraph and telephone communciation of the Southern; C. B. Hitch, general master mechanic of the Chesapeake & Ohio; L. C. Spangler, division superintendent, Chesapeake & Ohio, and W. C. Kirby, supervisor of yards and terminals, Seaboard Air Line.

C. P. Neill, manager of the Bureau of Information of the Southeastern Railroads, submitted a recapitulation of the studies made by individual southern roads which showed that the application of the shorter day would cost the railroads of the South approximately $90,000,000 per year. Application of a six-hour day, he testified, would result in an increase of nearly 20 per cent in the amount of overtime for which road, train, and engine service employees would have to be paid. He told the commission that locomotive engineers on some of the railroads in the South are already on a four-hour day basis while others, he said, are on a five-hour basis.

F. W. Brown, director of transportation of the Atlantic Coast Line, was asked by Commissioner Eastman if it would be practicable to change divisions and runs to make operation more economical on a six-hour basis. He replied that after the Adamson law became effective it was found generally that that was not the solution. The train speed has been increased, he said, but for other reasons, including the increase in the volume of traffic and to improve the service, and that for a time the increased cost was largely lost sight of in the increased revenues. There are many men who are paid for eight hours for much less work but he thought it too much to expect that the labor organizations would agree to changes in rules which would remove that condition. He also pointed out that overtime is not based on the average speed of trains and the fact that some freight trains are run at 30 miles an hour does not prevent the payment of overtime on slower trains.

Western Roads Estimate Increased Cost at $273,000,000

G. J. Bunting, vice-president and comptroller of the Illinois Central, submitted a consolidated exhibit giving an estimate of the increased payroll for the western roads at $273,291,655 or 26 per cent for 1930, on the basis of studies made for the month of August, 1930, on certain test roads. For the group of professional, clerical, and general employees the estimated increase is $44,515,934. For maintenance of way and structures it is $48,573,107; for maintenance of equipment and stores $75,432,224; for transportation employees in other than train, engine, and yard service $33,003,305; for yardmasters, switch tenders and hostlers, $4,427,681; for yard train and engine service $30,629,043, and for road train and engine employees $36,419,809.

L. H. Bond, engineer maintenance of way, Illinois Central, told the commissioners that under present conditions a change from an eight-hour to a six-hour day would result in a reduction in the number of employees that could be used in maintenance work because experience shows clearly that appropriations for such work depend upon earnings and during the depression have been reduced generally to conform with the decrease in earnings. With the total amount of money available fixed by other considerations, the effect of increasing the hourly wages of the employees would necessarily cause a decrease in the amount of work that could be done, resulting in accumulation of deferred maintenance which would have to be taken care of at some future time.

F. W. Grace, vice-president and general manager of the Missouri-Kansas-Texas, presented an exhibit containing a comparison of the compensation and service of employees in train service in 1916 under the 10-hour day, in 1917 and 1930 under the eight-hour day, and as estimated for 1930 on the basis of a six-hour day, for the Class I railways of the western district, including the Illinois Central and the Yazoo & Mississippi Valley. Total wages of train and yard crews in 1916 were $153,755,129 and in 1917 were $187,879,710, an increase of 22.19 per cent. In 1930 the total wages amounted to $265,311,228, an increase of 72.55 per cent over 1916; and on a six-hour day basis for 1930 they would have been $330,981,553, an increase of 115.27 per cent over 1916, 76.17 per cent over 1917, and 24.75 per cent over the actual for 1930. The net ton-miles during the period from 1916 to 1930 showed a decrease of 0.38 per cent and the freight locomotive miles showed a decrease of 14.84 per cent.

Other witnesses for the western roads were H. L. Worman, vice-president, operation, St. Louis-San Francisco, A. J. Hancock, assistant to vice-president, Southern Pacific-Pacific Lines, and H. W. Press, assistant to comptroller, St. Louis-San Francisco.

Testimony on behalf of the railways was concluded on May 18 and an adjournment was taken to May 23 when witnesses for the labor organizations will be heard.

Pennsylvania Bureau of New Ideas Uncovers Valuable Suggestions

(Continued from page 865)

far to men engaged in the following occupations: Boilermaker helper, brakeman, clerk, conductor, crossing watchman, electrician, enginemen, fireman, laborer, machinist, pipe fitter, store attendant and tinner.

The wide interest displayed by employees is demonstrated by the fact that suggestions have been received from men in 234 different payroll classifications representing every department of railroad work and every portion of the system.

The Bureau keeps a careful record of the subject of all suggestions and the authorship, since it has been found that changed conditions may render feasible the adoption of a suggestion once found impracticable. In such a case an endeavor is made to notify the employee who originally proposed the arrangement.

Results of Suggestion System

During	Number of Suggestions			
	Received	Finally acted upon	Adopted	
			Number	Percent
Year 1928*	2,247	2,086	192	9.2
Year 1929	2,504	2,206	419	19.0
Year 1930	2,440	2,584	851	32.9
Year 1931	2,007	2,120	705	33.3
Jan. & Feb., 1932	308	308	115	37.3
Total	9,506	9,304	2,282	24.5

* Includes last 2 months of 1927.

It is the Pennsylvania's experience that the Bureau of New Ideas is inspiring many employees to use latent powers of observation and analysis, encouraging and developing constructive thinking and providing additional opportunity for self-expression. All suggestions are handled and answered with due regard for the cooperative spirit that prompts their submission. While

this involves the expenditure of time and thought for those suggestions not found worthy of adoption, it is felt that the plan has demonstrated its worth as a medium for the encouragement and recognition of constructive interest on the part of employees.

Reaction of Employees

Explanations made in reply to suggestions that are not adopted undoubtedly broaden the viewpoint of thoughtful employees and in many instances tend to restore confidence in methods and practices that may have been questioned by uninformed or misinformed employees. The following quotation from the letter of an employee whose suggestion was not adopted reflects the care and diplomacy with which the Bureau handles such cases:

"Thank you very much for your thoroughly comprehensive letter of April 9 in regard to my suggestion regarding * * * Your letter discloses an angle to this proposition I had not heretofore taken into consideration, which makes me more pleased at the non-acceptance of my suggestion than if same had been adopted; and I am glad to have had this view presented to me."

Quotations from other typical letters reveal the general reaction of employees to the work of the Bureau as follows:

"I thank you for the opportunity the Bureau of New Ideas gives the employees to express their ideas and at the same time not appear impertinent as it might have been before the establishment of the Bureau."

"It is a real satisfaction to know that efforts of this kind are appreciated, and I assure you that if further suggestions occur to me they will be presented."

"While I appreciate and am grateful for the token of appreciation, I had no idea of receiving compensation for the idea presented but made the suggestion with the idea in mind of speeding up the service and saving time in making up the report."

"I wish to thank you very much for this token of appreciation and for the splendid interest the management is showing towards the employees in promoting things of this nature. Personally, I am very young on the railroad and my future is ahead of me. I have taken quite an interest in the work of my department and have had several occasions to present ideas to your department. The opportunity does not present itself to alter conditions when one is not employed in an official capacity and the Bureau of New Ideas furnishes the outlet. It makes the younger generation, the railroad men of tomorrow, proud that they have assisted in some measure when an idea is accepted."

Railroad Bills Separately Reported

(Continued from page 862)

It now appears, however, that the opposition to the idea of giving the Interstate Commerce Commission such broad powers to decide who might exercise control of a railroad had considerable potency, under the leadership of Representative Beck, of Pennsylvania, while the principal opposition to the plan for repeal of recapture, led by Representative Hoch, of Kansas, simmered down to a criticism merely of the idea of making it retroactive when the rate-making rule could not be repealed *ab initio*. Mr. Hoch did not attempt to contend that rates had been much higher under Section 15a than they would have been otherwise, but he was able to point directly to the Ex Parte No. 74 rate increase in 1920. However, he proposed to base recapture on the average for the entire period since 1920, instead of on single years, which would reduce the liability according to the commission's estimates from $360,000,000 to $237,000,000 down to the end of 1930, while the inclusion of 1931 and 1932 would take most roads out of the recapture list entirely. He also advocated a plan of compromise agreements on the valuations.

Rules Committee Hearings

The rules committee gave more time to hearings on the proposed rule than is usually given in such cases, although it spent only 15 minutes in executive session after the hearings were over. Mr. Rayburn spoke before the committee on May 10 and 11, stressing particularly the importance of repealing the recapture provisions retroactively for the purpose of relieving the railroads of the cloud that is hanging over their credit by reason of the commission's recapture claims and of relieving the government of the necessity for prolonged and expensive litigation in an effort to enforce the recapture. "Those who advocate government ownership," he said, "will be put up against the question sooner than they expect unless something is done in addition to the loans now being made by the Reconstruction Finance Corporation to the railroads. I cannot see how we can escape receiverships and when we come out of receivership we will have government ownership."

He also urged the importance of controlling the activities of holding companies. Representative Parker, of New York, former chairman of the committee under the Republican regime, also spoke in favor of the bill.

Representative Beck, who with Representatives Cooper, Wyant, and Igoe, had submitted a minority report objecting to the so-called "holding company" provisions of the bill, made a strong argument both against those provisions and also against the idea of combining such unrelated subjects in one bill in such a way as to avoid a clear-cut decision by the House on either. While he strongly advocated repeal of recapture, if it could be considered in a separate bill, he said that it might be unfortunate to take such a step at this time because the public would misunderstand it and many would believe that it was proposed to give $360,000,000 to the railroads, not realizing on what a "slender basis" the government's recapture claims rest. He particularly criticized the holding company provisions on the ground that they would give the Interstate Commerce Commission power to decide who may own railroad securities, regardless of whether any question of elimination of competition is involved, and that this would have a "revolutionary" effect on railroad credit. "This is the last step toward government ownership," he said, "and its principal proponent is an advocate of government ownership who wants to increase the power of a commission already drunk with power. Mr. Rayburn is merely the medium for the expression of the insensate ambition of the Interstate Commerce Commission, and particularly of Mr. Eastman, for more power."

Representative Hoch of Kansas, who also appeared before the rules committee, said he favored the holding company provisions in the bill but outlined his reasons for opposing retroactive repeal of recapture. He said he favored repeal of Section 15a, including recapture, for the future, but not for the past.

Communications and Books . . .

A Dictator for the Railways

CHICAGO.

TO THE EDITOR:

Whenever railway men congregate these days in conferences, and as usual disagree, the question arises, "Do the railways need a dictator?"

A single dictator for all the railways, or even for the group of railways in a region, would require almost superhuman ability and strength to fulfill such a function. When Rome was thrown into chaos through the death of Caesar, a "triumvirate" was established, and three men, Anthony, Octavius and Lepidus, were appointed as the "triumvirate" to restore order in the state. This coalition of three men exercised united authority and control under one office.

Taking a leaf from ancient Roman history, the railways might bring order out of chaos if they were controlled, not by one man, a dictator, but by a "triumvirate" consisting of three capable railway men in active service, one a legal man, one an operating man and one a traffic man.

If the Western region would establish such a plan, selecting men from the ranks in active service, it would be far superior to the appointment of a dictator, who might be without the necessary railway experience and thus make a complete failure. No single individual, no matter how able, would have the necessary qualifications to meet such a tremendous task.

A "triumvirate" of three men, capable in their own fields, would divide the burden and responsibility and yet act as a unit.

RAILWAY INVESTOR.

How Trucks Put End To Orderly Business Practice

HOUSTON, TEX.

TO THE EDITOR:

I have read with considerable interest articles in the *Railway Age* dealing with the unfairness of bus and truck competition with the railways.

A relative of mine is in the brokerage business at San Antonio. In the early spring he wired a number of places over the West to obtain shipment of a certain kind of planting bean. He was unable to get in touch with any dealer or firm having them, and was at loss as to how he was to supply a large number of orders that had come to him over the week previous.

On about the fifth day after he had tried to buy a car of these beans, a man walked into his office and handed him some samples of the bean he had been trying to buy. He asked the man for his price, which he found to be about 15 per cent lower than the price he had been paying, this despite the fact that there seemed to be a scarcity of this product. Startled, he asked the man when he could deliver beans of that kind, and how many he had.

"I have about two carloads," the man replied, "and can deliver them to you in thirty minutes."

My relative then learned that the beans were already in San Antonio on trucks parked on the edge of the city, and at once gave the man an order for every bean he had. The beans were delivered that afternoon a half-hour before the store room closed for the day.

The following morning the broker got on the telephone to call his patrons to let them know he could now supply them with their orders, for beans. To his surprise he learned that every one of them had already bought a supply from the same man who had sold him the two car loads, and many of them had even paid a lower price than he had. Today he is holding the bean-sack for some $1100, as he was able to sell but a few hundred pounds of the total amount purchased.

This man has been in business at the same stand for twenty years, and today employs 32 people. He pays taxes, is a member of the Chamber of Commerce, and contributes liberally to all things of a civic nature.

Is his business, built up through following the highest of ethics and principle, to be destroyed by someone who does not even live in the state; by someone who does not pay taxes? And some persons assert that it is only the railroads, and not the shippers and receivers of freight who are interested in securing adequate regulation of highway transport!

J. G. HILL,
Clerk, Southern Pacific Lines.

Government Ownership With Private Operation by Lease

HOWISON, VA.

TO THE EDITOR:

The Battle of Waterloo was lost because Grouchy arrived five minutes late.

About two years ago, there was suggested to you a method whereby adequate earnings by the railroads might be restored. It urged simply that those controlling the destinies of the railroads ask for JUSTICE—that they should demand the same treatment by the government of their rights-of-way as was accorded the highways and waterways. It met with the approval of some and suggestions of alternatives by others, but no concerted action was taken. The adoption of this radical departure from existing customs, would have meant to the railroads a saving of $800,000,000 per annum thereby enabling them to maintain the then existing scale of wages and to reduce freight rates by 10 per cent. The railroads proceeded in an opposite direction. They secured a temporary reduction of wages after much delay and always inadequate, and, in contravention of existing economic tendencies, an advance in rates. The amounts secured thereby, are now nugatory because the combined sum is more than offset by the lessened movement of tonnage by rails while that moving by truck has increased and continues to do so.

Because of the time required to educate a people toward legislative enactments contrary to precedents heretofore observed but no longer existing in reason, I am of the opinion that the maintenance of the rights-of-way by the government under railroad supervision, will no longer suffice to prevent general receivership. It now becomes necessary, unless government ownership is to occur, that something to secure larger results must be devised. The government should now be asked to purchase the rights-of-way, and lease these to the railroads on terms varying with the earnings of the roads. The existing bonds of the railroads could be converted into the purchase bonds issued by the government. The interest saved in the converted railroad bonds for the government issue would mean a large saving to the public. In fact the saving would almost absorb the interest cost to the government and require no new money.

In ten months the former wage scale is to be restored. So far as I know nothing is being done in anticipation of the recurrence of this problem. Is there any one so obtuse as not to realize that the borrowing by the railroads from the Reconstruction Finance Corporation, in large measure to pay matured or maturing interest and existing bonded indebtedness is the first step toward selling the railroads to the government?

The embarrassment of the railroads arose from four direct and not distant causes. They were:

1. The failure in years past to recognize the emergence of a system of transportation comparable to that of the railroads in many cases and superior in some. These new methods have been regularly subsidized as were the railroads in former times.

2. The purchase by the railroads of securities not worth at present the third of their cost.

3. The acceptation of the tenets of the false prophets who stated the "depression was a transitory affair of a few months duration which led the railroads to maintain high wages and unnecessary expenditures for a full year. As was the case with the farm relief fiasco, they were asked to control economic laws and have failed in doing so.

4. The failure now to realize that borrowing money for the purposes named is in effect an admission of insolvency. Their embarrassment will increase by what it feeds on.

If government ownership is in contemplation, the course now being pursued will accomplish the purpose. If government ownership is to be avoided, is it not incumbent on the railroad executives to suggest a plan? There may be one far superior to mine and the public would welcome it. It should not be overlooked that the proper solution of the railroad problem is vital not alone to the railroads but to every savings and commercial bank, to all insurance companies and thousands of investors. Laissez faire would spell universal insolvency.

ALEXANDER BERGER.

New Books

General Engineering Handbook, by Charles Edward O'Rourke, assistant professor of structural engineering, Cornell University, editor-in-chief. 921 pages, illustrated, 8 in. by 5 in. Bound in flexible fabricoid. Published by McGraw-Hill Book Company of New York. Price $4.

This handbook differs from those previously offered in that it endeavors to present a general review of civil, mechanical and electrical engineering in less than 1000 pages. It represents the work of 30 authors who, with three exceptions, are professors in engineering colleges. The subject matter is necessarily presented in concentrated form and implies a general knowledge of engineering theory and practice on the part of the user, the primary purpose being to provide a ready source of information to the engineer concerning divisions of the profession outside the range of his own practice. The book is divided into 31 sections, such subjects as Railway Location, Pumps, Refrigeration, Foundations, Welding, Power Transmission, and Heating and Ventilating being indicative of the wide range of subjects covered.

The Interstate Commerce Commission, Part II, by I. L. Sharfman. 533 pages, 9¼ in. by 6 in. Bound in cloth. Published by the Commonwealth Fund, New York. Price $4.50.

This second volume of Professor Sharfman's contemplated four-part study in administrative law and procedure is subtitled "The Scope of the Commission's Jurisdiction;" it advances to the half-way point the comprehensive work commenced in Part I—The Legislative Basis of the Commission's Authority—which was reviewed in the *Railway Age* of December 19, 1931.

The same high standards of painstaking investigation and analysis which he set for himself in the first volume are maintained by the author as he proceeds in this new work to consider the manner in which the Interstate Commerce Commission, made more and more powerful by the statutory enactments analyzed in Part I, has applied these sweeping powers to the regulation of the railroads and other public service corporations. Detailed attention is also given to the commission's assertion of power over intra-state commerce and to its exercise of administrative discretion, the latter including a consideration of the scope of judicial review and critical comment upon recent evidence pointing to pressure from executive and legislative departments which threatens the independent status of the regulatory body.

Professor Sharfman shows at the outset how it early developed that effective railway regulation could be had only with some measure of I. C. C. control over allied utilities such as water carriers, express companies, sleeping-car companies and pipe lines and over such auxiliary transportation facilities as private cars and industrial railroads. Emphasis in this portion of the discussion is placed upon the commission's "restrained approach in the matter of asserting jurisdiction" and how the regulatory body has always "sought relief through the natural pathway of direct legislative enactment rather than through the overreaching device of strained administrative construction." Once satisfied as to its jurisdiction, however, the commission is found not to have been timid in asserting its authority and its "emphasis upon realities, with a corresponding repudiation of mere legalism, has been especially noteworthy." Among examples of determinations of this character is listed the complete overhauling, in 1912, of the traditional system of express rates whereby the number of possible rates for the country as a whole was reduced from over 600,000,000 to less than 345,000. The author finds in this connection that the commission's own characterization of this decision was "fully justified" when in its 1912 annual report it said: "This is probably the most important single piece of work ever done by the commission and is an illustration of the kind of constructive work by which this body can be of most assistance, both to the shipping public and to the carriers." To this Professor Sharfman, in further praise of the express decision, adds: "From the standpoint of the commission's activity the express business has assumed a degree of stability which is distinctly lacking in the railroad field."

The author in concluding this phase of his discussion points to the still further assertions of legislative authority required if the commission is to have effective control of interstate transportation. He refers in this connection to transport agencies competitive with railways but holds that "The nature of control to which motor carriers and carriers by water should be subjected must be determined in the light of their distinctive economic characteristics; and these characteristics appear to necessitate a considerably smaller measure of authoritative interference and a much greater degree of reliance on competitive forces than now prevail in the case of railroads." No relaxation of railway regulation is, however, suggested as the need for restricted regulation of railway competitors is found to lie principally in the desirability of effecting co-ordination.

The section on the commission's authority over intra-state rates and activities of railways considers in detail this overlapping field and conflicts arising in connection with its dual occupancy by state commissions and the federal regulatory body. Although the 1920 legislation gave the I. C .C. sweeping powers to remove discriminations against interstate commerce it is pointed out how, after initial arbitrary acts in the exercise of this increased authority, the period of "administrative immaturity" passed and the commission now relies in increasing measure on the co-operation of state authorities to aid in the adjustment of local situations.

The vast power of the commission is further appreciated as the discussion turns to a consideration of its relationship with the courts where it is shown how its large measure of discretionary authority is on the whole free from judicial review; how the scope of judicial censorship has been progressively narrowed by the application of the doctrine of primary jurisdiction, the refusal of the courts to review so-called negative orders and finally the restriction of questions for review to matters of legal power, errors of statutory interpretation, absence or disregard of supporting evidence, or "such other 'mistakes of law' as may reasonably be deemed to issue in arbitrary action or abuse of discretion." In view of these established limitations, almost invariably recognized by the courts, the O'Fallon decision appears to the author "to involve a sharp departure from the well-established attitude of the Supreme Court . . ." since it was in effect "a substitution of the judgment of the court for that of the commission."

Closing pages are devoted to evidences of attempts by Presidents and Congress to influence the commission, but, while deploring this development, the author finds that the commission's record discloses no ground for belief that it has actually yielded to such influences. Such tendencies, he holds in conclusion, might if permitted to develop "seriously jeopardize the system of control which has been deliberately and laboriously developed over a period of more than four decades, and which has constituted, by comparison with earlier methods, the most appropriate and effective instrument yet devised for the equitable adjustment of private rights and public interest."

The two forthcoming volumes, which will complete this comprehensive work, are to be sub-titled "The Character of the Commission's Activities" and "The Commission's Organization and Procedure.

Odds and Ends . . .

Another "Pair"

Mt. Kisco, N. Y.

To the Editor:

I noticed the item in your April 9 issue about two adjacent cars having the same number. One day some years ago—in 1925, to be exact—I saw a train on the Boston & Albany, the engine and first car of which had the same number. The train was on the line that runs from Hudson, N. Y., to Chatham, and the engine number was 511. While you are figuring out the chances of two cars with the same number being coupled together, you might figure out how often an engine is likely to be coupled to a car of the same number. I never saw it anywhere else.

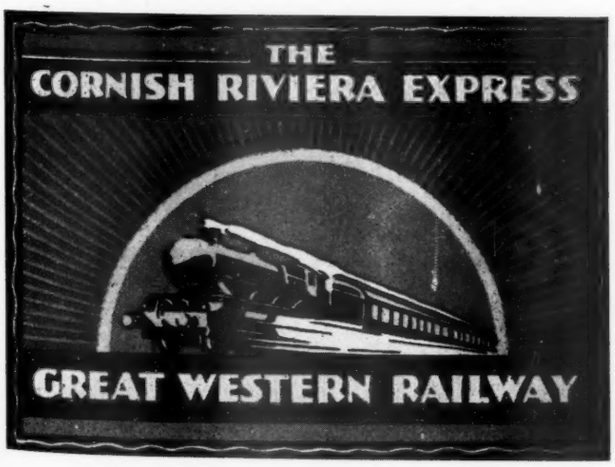
G. W. O'Connor.

No Time for Fletcherizing

Passengers on trains bound for the Province of Quebec are warned to eat hurriedly. It seems that, if they have not gulped down their coffee and dessert before they enter the province, they must pay the hospital tax recently imposed on meals served within the boundaries of Quebec. Each meal costing 35 cents or more is subject to a 5 per cent tax, and knowing what we do about dining car prices, we are quite sure that this will include all meals served in dining cars. Here is the way the Canadian National legal department interprets the regulation. A meal served, eaten and paid for in the province, of course, pays the duty. A meal served outside of Quebec, but eaten and paid for in the province, is also taxable. This applies, for instance, where a passenger starts in on his soup in New York or Vermont but has his ice cream and coffee in Quebec. If he wants to, the passenger can pay for the portion of his meal served in New York — say at Rouses Point — in which case no duty is charged. He may then order more food in Quebec and pay the duty on the later order only. The law is hard on those entering the province, but lenient on those departing. For example, a meal served in Quebec, but eaten and paid for outside of the province, pays no duty. However, this does not excuse a patron who finishes his meal within the province and pays for it outside. His bill is taxable.

A New Field for Label Collectors

The Great Western Railway of Great Britain, extending its policy of introducing pictorial luggage labels for its principal trains, recently adopted the attractive sticker reproduced herewith for use on the personal baggage of all passengers patronizing its famous "Cornish Riviera Express," which runs between London and points in Cornwall and the southwest of England. The original of the label is done in harmonious shades of yellow, orange, blue and chocolate brown, with the smoke from the locomotive, the lettering, etc., in white. Another label, for use on the "Cheltenham Flyer" (the world's fastest train), was introduced several months ago, while a third, for the Great Western's "Torbay Express," is now being prepared.



A Pictorial Baggage Label for One of Great Britain's Famous Trains

The Argentine "Reglamento"

Chicago.

To the Editor:

The item entitled, "Rule Obedience in the Argentine," on the "Odds & Ends" page of your April 2 issue, has interested me greatly. The term used in the Argentine, and I believe also in Chile, for the passive type of strike described, is "Reglamento," which is the Spanish word meaning "by law" or "by rule."

Its application is a serious matter for railway operating officers to contemplate. Perhaps your readers would like to know, however, why the "Reglamento" is used by railway labor in preference to the more dynamic method represented in the "strike" as applied in American and European countries.

Early in 1929, while the writer was visiting Argentina on railroad business, and again on a similar occasion in 1930, the "Reglamento" was in effect in certain districts of certain trunk lines. Some of the grievances, which the men thus desired to correct, seemed to be of the most trivial nature; nevertheless, the effect upon the service was just as serious as if there had been major grievances.

Since every male citizen is an enlisted military reservist, whether voluntarily or involuntarily, and since the reservists may be called to service by military edict, a railroad strike, as we understand it, would be classed as a national emergency to be dealt with much as a revolution. Hence, the "Reglamento."

It is not only train operation which is affected, nor is it only due to the application of antiquated laws and rules. Some of our most modern methods and practices, adopted for the regulation of operation, lend their ammunition. For instance: Our standard accounting figure of six miles per hour for switch locomotives, has similar application in the Argentine and is sometimes used as a maximum limit in yard operation during a "Reglamento." The same applies to some of the agreements governing division and classification of work between the various classes of the shop crafts. It will be readily observed by an experienced railway operating officer that the "Reglamento" could seriously make itself felt in almost every phase of operation, maintenance and construction.

In the Argentine, except on the state railways, most of the supervisory officers are European, principally English, while practically all labor is native. The situation calls for a rather large operating staff of supervisory officers to avoid the possibility of complete interruption of traffic in times of trouble.

It has appeared to the writer that there is little, if any, bitterness or malicious destruction evidenced during periods of the application of the "Reglamento," and it also appears that the men are as open-minded and prompt in agreeing to adjustment as they are in calling it. The seriousness appears to lie in its frequency of application rather than its extensiveness.

L. F. Wilson,
President, Wilson Engineering Corporation.

Northern Pacific Land Grants are again brought into court. A suit to determine the right of the road to land given it by Congress was begun in the federal court at Spokane, Wash., on May 5. The suit was filed to settle all litigation which arose from congressional grants. As the case involves land in Washington, Idaho, Montana, North Dakota and Minnesota, the case will probably not be settled for several years.

NEWS

Urges Railway Study of Competitors' Cost

Whitridge, in suggesting inquiry, shows tremendous outlay for motor transport

Railroads should organize at once a research unit to undertake, in co-operation with the Bureau of Railway Economics and the Railroad Credit Corporation, a scientific study of the economic status of competing forms of transporation, says Horatio L. Whitridge of Baltimore, Md., railway finance specialist and author of the "I. C. C. vs. Class I Railroads of the United States," in a recent letter addressed to the president of each class I railroad, attached to which was a copy of his latest study entitled "An Appraisal of the Economic Soundness of the Motor Truck."

The inquiry which Mr. Whitridge's suggestion contemplates would "expose hidden costs where they exist and make a thorough investigation to determine whether and to what extent motor, water, and air carriers operating in competition with the railroads are receiving direct or indirect government aid amounting, in effect, to a subsidy." The research would be conducted on a broad scientific basis so that the result "would be accepted as a national standard." Mr. Whitridge would exclude "gypsy trucks in the hands of the operator-owner" and seek the co-operation of large highway fleet operators such, for example, as the Post Office Department. Also, he suggests, the costs of operating the Railway Express Agency fleet could be studied.

"With basic economic facts in their possession," Mr. Whitridge holds, "the railroads could demonstrate that they are the leaders in the field of mass production of cheap transportation, and that their maintenance is a national necessity, not just an empty phrase; and they could then also demand the right to develop water, highway and air transportation as well, along sound and constructive lines.

"The low state of railroad credit at the present time is due largely to a fear of the unknown, and the uncertainty of what the future has in store, and if the truth were told, there is also in the public's mind the thought that perhaps railroad management has broken down. The railroad executives are under great responsibility to the investors of this country, who have entrusted private property to their care and it is time they put an end to inter-company rivalry, and, with a united front, fought for the transportation industry as a whole."

Mr. Whitridge's own study, which accompanied the letter, is an analysis of the recent report in I. C. C. 23400—Co-ordination of Motor Transportation. In addition to emphasizing the salient parts of this report, Mr. Whitridge has assembled certain other facts and figures that have a bearing on motor truck operations. It appears from the latter that the 1,298,000 trucks of an average capacity of 2½ tons, carrying in 1929 only 4.2 per cent of the country's commerce, cost over $4,000,000,000 to operate, and it is figured that it will require the sum of 194 billion dollars to keep the present fleet of 26,000,000 motor vehicles of all kinds in operation during the next decade.

By way of contrast to the foregoing, the analysis indicates that in 1928, 1929 and 1930 the country's railroad freight bill amounted to less than one quarter of a mill per mile per dollar of value of commodities transported. A ten-year railroad budget totaling $63,250,000,000, or $130,000,000,000 less than the projected motor transport budget, is also set up.

Railway Employment Increased in March

The number of employees in the service of Class I railways as of the middle of March was 1,096,541, according to statistics made public by the Interstate Commerce Commission. This was an increase of 3,326 employees as compared with the number in February although it was a decrease of 16.89 per cent as compared with March, 1931. Although the increase in March is seasonal it is the first to be shown since last May, when the number was 1,337,331. Each month since then has shown a smaller number of employees in service.

New Jersey Rates Suspended Until September

The Public Utility Commissioners of New Jersey reporting (May 11) on the general tariff of freight rates, for all of the roads of the state, which were filed last December and which were suspended on complaint of various shippers, has further suspended the tariffs and has called for revised schedules of class rates, conforming to findings set forth by the commission, by or before September 10, 1932. The commission was not satisfied with the mileage scales presented by the railroads. Hearings were held in December, January and February. The report says that the tariffs do not maintain the proper relation between interstate and intrastate rates. The required new tariffs must be filed 30 days prior to their effective date.

Labor Differs on Cure for Economic Troubles

Two groups of railway union leaders give conflicting advice to President Hoover

Conflicting advice as to how to solve the economic problems of the world has been given to President Hoover by two groups of railway labor executives who have called recently at the White House; although both groups agreed that economic conditions in the country today "call for immediate constructive action on the part of the federal government."

Asserting that unless "something is done to provide employment and relieve distress among the families of the unemployed, we cannot be responsible for the orderly operation of the railroads of this country—that we will refuse to take responsibility for the disorder which is sure to arise if conditions continue," one group, which went to the White House on May 13, suggested a 25-year moratorium on foreign debts to the United States with provision for cancellation of the obligations of each country in proportion to its imports from this country during that period. Calling attention to the continued reduction in railway employment and to the 10 per cent reduction in railway wages they said that unless something is done to improve conditions the organizations will have no other recourse than to advocate a dole for the unemployed. This statement, which included a review of business conditions to show that the decline in foreign trade is largely responsible for present conditions, was signed by officers of the Brotherhood of Locomotive Firemen and Enginemen, the Brotherhood of Railroad Trainmen, the Switchmen's Union of North America, the Order of Railroad Telegraphers, the American Train Dispatchers' Association, and the Brotherhood of Maintenance of Way Employees.

On May 16 another delegation of labor executives went to the White House and left a statement saying that the newspapers had given the impression that the first delegation represented all the railway labor organizations and that the question had been discussed at a meeting of the Railway Labor Executives' Association but that only a minority had endorsed the foreign debt proposal. This statement, signed by officers of the Brotherhood of Locomotive Engineers, the Brotherhood of Railway Carmen, the International Brotherhood of Firemen and Oilers, the Brotherhood of Railway

(Continued on page 886)

Commons Committee Ends C.N.R. Sittings

Passenger traffic testimony ends stormy session with political fireworks

Asserting that he was not speaking critically, Hon. Robert J. Manion, Canada's Minister of Railways, charged that the Canadian railways have been "asleep at the switch" for the last eight or nine years in not taking aggressive steps to meet the growing competition of highway transport. The statement was made before the House of Commons Committee on National Railways and Shipping at Ottawa last week. A move of the roads to improve their passenger earnings by excursions at "ridiculously low rates," as Sir Henry Thornton described them, and by which "humanity was moved by the train load," was told to the committee by Sir Henry.

"If business begins to fall off," said Sir Henry, "you redouble your efforts to retain what you have got and to get more. Now we have got to the point where no matter how you redouble your efforts there is no more business to be had. You are chasing what might be described as a mechanical rabbit. The maximum earnings from passenger trains come from filling these trains. At the Liverpool street station in England, when I left there, we were handling 250,000 passengers a day. They were concentrated in the hours from about half-past seven to half-past nine and in the evening from something like half-past four to half-past six. Many of those passengers were carried at a ridiculous rate per passenger mile. Some passengers, as I recall it, were carried at something like ten miles for what would be 5 cents; and yet that was not an unprofitable business because the trains were packed full of people."

"Has it not reached the stage," Dr. Manion asked, "where both railways should seriously get together to cut out luxurious passenger service, or, at least, stop increasing luxurious passenger service, with the object of bringing up the earnings to meet the expenses?"

"I think that is a perfectly sound statement and one with which no intelligent railway officer would differ," Sir Henry replied. "As a matter of fact, both railways have done that to a very measurable extent in reducing the number of passenger-train miles. Much of this is bound up in the question of competition. If there were a general pooling of all passenger receipts, we could unquestionably get rid of a great deal of these competitive implements which we now employ."

After many weeks of stormy sittings in which Conservative members were active in disclosing details of salaries and expenses of C. N. R. officers, the committee ended its public sittings last week and will in a few days present its final report to the House. That report is bound to furnish the basis for an acrimonious debate. Liberals are insisting, as they did in the committee hearings, that the Conservatives, who are now in power, have by their gruelings of officials of the railway destroyed public confidence in the road, and one member, Hon. William Euler, an Ontario Liberal, went so far as to declare that the committee sittings had resulted in the publicly-owned road losing business. Both Mr. Euler, who is an aggressive public ownership advocate, and Dr. Manion, Minister of Railways, had a clash at the end of the public sittings, the latter declaring that the former had no monopoly of concern for the national road, that he, the Minister, was just as interested in its welfare.

Another feature of the closing sitting was cross-examination of Premier R. B. Bennett, who was on the witness stand, by two Liberal members of the committee, William Duff, a Nova Scotian, and Ross W. Gray, an Ontario member, as to the rental he pays for his suite at the Chateau Laurier, a C. N. R. hotel in Ottawa. His suite was made possible by remodelling the second floor of the hotel on the west wing, 15 rooms being converted into his suite, for which he pays a monthly rental of $400. It cost over $100,000 to remodel those rooms into the suite. The Liberal members made this attack upon Premier Bennett in retaliation for attacks by Conservatives throughout the session on Sir Henry Thornton and also on the Liberal leader, Rt. Hon. W. L. M. King. These two Liberal members argued that the Prime Minister is paying too low a rental and that, in view of the present financial condition of the road, he should make an upward adjustment. Premier Bennett replied he was paying all he was asked to pay, and that Sir Henry Thornton had assumed full responsibility for the remodeling and for the rental charged.

Katy Commences Operation of Banana Trains

The Missouri-Kansas-Texas, on May 2, began the operation of special periodical refrigerated banana trains out of Galveston. Trains are operated on a schedule of 18-hr. or less between Galveston and Ft. Worth, where they are broken up. The first train, on May 2, consisted of 40 cars and left Galveston at 9 p. m. It arrived in Ft. Worth at 10 a. m. the next day. Two fruit ships arrive at Galveston weekly, each bringing from 35 to 40 carloads of bananas.

Club Meetings

The Railway Club of Pittsburgh (Pa.) will hold its next meeting at the Fort Pitt Hotel, Pittsburgh, on Thursday evening, May 26. Dr. Paul V. Faragher will present a paper on the manufacture of aluminum and A. H. Woolen will discuss the use of aluminum alloys in the transportation field, with stereopticon illustrations. James W. Rickey will show a motion picture "Chute a' Caron Obelisk."

Edward Hungerford, of the New York Central Lines, spoke on "One Hundred Years of Railroading in New York State" at a meeting of the New York Railroad Club, held May 20, in the auditorium of the Engineering Societies Building, New York.

Six Months Guaranty in 1920 Not a Subsidy

Supreme Court rules such payments to the railroads are taxable as income

The six-months guaranty payments made to the railroads by the federal government in 1920 following the relinquishment of federal control constituted income, taxable under the federal income tax law, and were not of the nature of gifts or subsidies, the Supreme Court of the United States held on May 16, affirming the decision of the Court of Claims in a suit brought by the Texas & Pacific for a refund of part of the tax collected by the commissioner of internal revenue. The company had omitted the amount of its guaranty, which was based on the amounts which had been paid by the government as compensation for the use of the properties during the period of federal control, and had contended that the amount received was a subsidy or gift rather than income. After describing the payments made by the government for the federal control period, and the provision in the transportation act of 1920 for a guaranty of a "minimum operating income" for the six months following the return of the roads, the court pointed out that during the federal control period the railroads' "expenses had risen and there had been no commensurate increase in rates."

"While the government had either paid or was obligated to pay just compensation for their requisition," the decision continued, "the amount of it was known to be insufficient for rehabilitation of the roads as privately owned and operated organizations. Until rates could be adjusted to meet increased expenses, loans be negotiated, and operating forces realigned and reintegrated, the credit of the carriers must by some means be reestablished. Thus the government had a real obligation, not readily susceptible of accurate measurement to assist in the restoration of normal conditions. The purpose of the guaranty provision was to stabilize the credit position of the roads by assuring them a minimum operating income. They were bound to operate their properties in order to avail themselves of the government's proffer. The sums received under the act were not subsidies or gifts,—that is contributions to the capital of the railroads,—and this fact distinguishes such cases as Edwards v. Cuba Railroad Co., 268 U. S. 628, where the payments were conditioned upon construction work performed. The government's payments were not in their nature bounties, but an addition to a depleted operating revenue consequent upon a federal activity."

Central Vermont Outlines Plans for Store-Door Services

The Central Vermont, in joining several other New England roads in the l.c.l. store-door collection and delivery plan outlined in the *Railway Age* of May 14, has selected six of the larger cities and

towns which it serves for the inauguration of the service on July 1. Pick-up and delivery in these communities will apply on l.c.l. freight to and from Boston & Maine points at which similar store-door services are available.

In addition the C. V. will, at the same six points, provide pick-up or delivery service, respectively, for l.c.l. destined to or originating at its pier 29, New York City. Selection of the six communities, the announcement states, "is only the beginning of an extensive pick-up and store-door delivery service in Vermont and it is expected this service will be extended to other Central Vermont points when occasion warrants."

Modernized Jersey Central Steamer Placed in Service

Remodeled and refitted to resemble a private yacht, with new public rooms, private salons, dance floor, and glass-enclosed promenade deck, a reconditioned and speedier Sandy Hook, the Central of New Jersey steamboat which plies between New York City and Atlantic Highlands, N. J., was in service again on May 17 when officials of the railroad entertained a party of newspapermen and representatives of the business press at luncheon on a trial and inspection trip. The Sandy Hook will resume operation on its regular schedules on May 22; the vessel which was burned last year has been remodeled and reequipped at the Port Richmond yard, Staten Island, N. Y.

The principal features of this yacht-like ship are its trim lines and the originality of its public rooms, dining quarters, dance floor and private salon. The observation deck and the after section of the salon deck are open, while the remainder of the deck space is glass-enclosed, like the promenade deck of a modern ocean liner. In the bow on the salon deck are one large cabin, and 10 smaller staterooms. These rooms are furnished with stick willow armchairs, tables and settees, the color scheme of the upholstery and curtains being in keeping with the summery atmosphere of the furniture and other fittings.

The dining salon, located admidships on the same deck, has one set of casement windows opening on the salon deck and another set at the level of the top deck. Over the main doors of the dining salon are two murals, the work of J. Scott Williams.

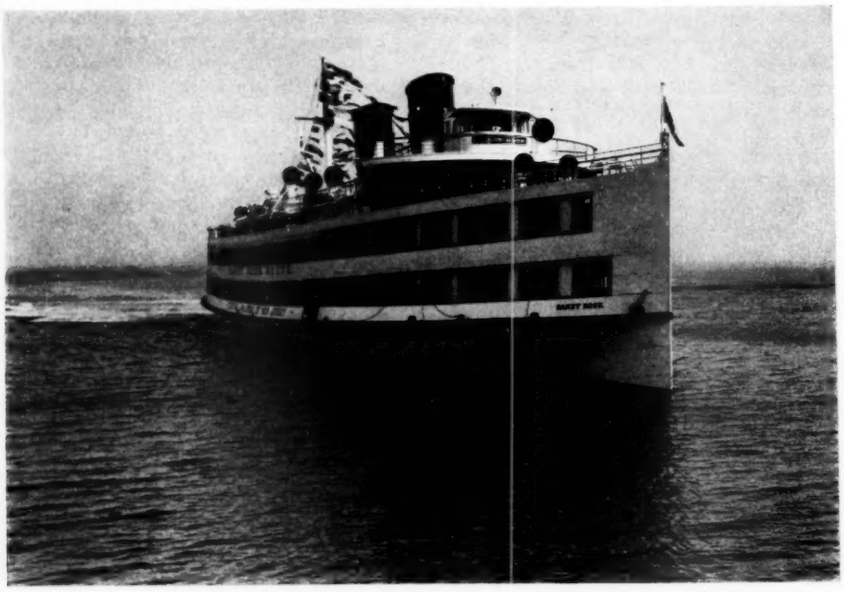
Still further aft on the salon deck is the main lounge. In contrast with the traditional fashion of ship lounges, the chairs, tables and settees here are of the club-room type. One end of the lounge consists of open archways, thus forming a mezzanine for the dance floor, located on the deck below.

Perhaps the most original of the rooms is the private salon that opens on the observation deck, aft. This room is 16 ft. by 20 ft. and the big center table will seat up to 20 diners. A serving pantry adjoins the salon and connects directly with the main galley, to facilitate the service of meals in the salon, or on the deck just outside. This room is designed for business conferences and private bridge, dining and dancing parties.

Finally there is the combined radio broadcast-public address-musical transmission system with seven main outlets so arranged that diners may listen to dinner music at the same time that dance music is broadcast in the ballroom.

Pennsylvania Women's Aid

The women's Aid of the Pennsylvania Railroad, now numbering 241,387 members, for the year 1931 spent upward of $275,000, which is 60 per cent greater than the total disbursed in the year preceding. This organization of the wives, mothers, daughters and sisters of Pennsylvania employees, which was started at the time of the World War, when many employees had entered the army and navy, now flourishes on every division of the Pennsylvania System, and the visits last year, to families needing assistance or suffering from sickness, totalled 42,532. These figures include visits in the Christmas holidays to nearly 8,000 families, when 6,500 baskets of provisions were distributed. Besides direct aid, the women have had parties for children and other social activities. Mrs. W. W. Atterbury, wife of the president of the road, is director general of the organization.



The Reconditioned Sandy Hook Approaching Atlantic Highlands, N. J.

Livestock Truckers Restrained

In a suit against livestock truckers in Minnesota, filed by Raymond Brothers, William Hoefel and A. A. Abeln, operators of common-carrier truck lines, and the Northern Pacific, the Great Northern and the Minneapolis, St. Paul & Sault Ste. Marie railroads, the Stearns County district court has temporarily restrained four livestock truckers from hauling merchandise. While the Minnesota statutes permit the hauling of livestock and other agricultural products from farms to markets without restriction, the practice of these truckers in picking up freight for the return trips, according to the plaintiffs, puts them in the class of carriers which must have certificates from the state before operating. The case will come up for final arguments in the Stearns County district court later in the present term. The plaintiffs charge that this "free lance" trucking results in loss to the state of substantial tax revenues, an injustice to shippers; and the closing of many smaller railway stations resulting in the curtailment of essential railway service.

Piedmont & Northern Extension Under I.C.C. Jurisdiction

The Supreme Court of the United States, in a decision rendered on May 16, affirmed the judgment of the district court for the western district of South Carolina in enjoining the Piedmont & Northern from proceeding with the construction of extensions of its electric line in the absence of a certificate which had been denied by the Interstate Commerce Commission, holding that it is not an "electric interurban railway" within the meaning of the exceptions in paragraphs 18 to 21 of Section 1 of the interstate commerce act. The electric railway, the court held "is of such importance in interstate commerce and renders a service so predominantly devoted to the handling of interstate freight in connection with steam railroads, is in such relation to connecting steam carriers, and competes with steam trunk lines in such manner, that in view of the declared policy of the act we cannot hold it an 'interurban' railway within the exemption."

The exemption referred to in the act applies to "interurban electric railways which are not operated as a part or parts of a general steam railroad system of transportation." The court said that instances might be supposed where there would be difficulty in determining whether an electric railway falls within or without the exception but that "this is not such a case. The facts clearly require a holding that petitioner's railway is not within the true intent and purpose of the exclusion intended by the paragraph."

In March, 1927, this road undertook two extensions, from Spartanburg, S. C.,

to Gastonia, N. C., 53 miles, and from Charlotte, N. C., to Winston-Salem, 75 miles. The commission notified the company that appropriate application should be made to it for a certificate authorizing these extensions and the company filed an application accompanied by a claim of exemption. The commission overruled the claim, and then denied the certificate on the merits. Upon appeal the Supreme Court held that the commission's order, being negative, could not be set aside. To bring the matter squarely before the court the company made a technical beginning of construction work and the commission then obtained an injunction. Originally the Piedmont & Northern had contended that the work had been undertaken within 90 days of the adoption of the transportation act but later abandoned this contention and stood only on the claimed exemption. The company has a connection with the Georgia & Florida at its southern end, and the extensions

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 167 Steam Railways, Including 17 Switching and Terminal Companies.

FOR THE MONTH OF MARCH, 1932 AND 1931

Item	United States		Eastern District		Southern District		Western District	
	1932	1931	1932	1931	1932	1931	1932	1931
Average number of miles operated	242,079.61	242,180.92	60,125.34	60,210.67	46,212.18	46,107.36	135,742.09	135,862.89
Revenues:								
Freight	[a] $225,031,197	$291,314,108	$100,884,907	$125,940,644	$44,388,240	$56,532,717	$79,758,050	$108,840,747
Passenger	[e] 34,398,434	[b] 47,144,406	20,460,391	26,273,876	4,534,974	6,992,902	9,403,069	13,877,628
Mail	8,472,573	9,009,475	3,346,365	3,494,665	1,483,788	1,518,314	3,642,420	3,996,496
Express	5,736,991	8,337,121	2,560,131	3,539,018	1,063,377	1,576,094	2,113,483	3,222,009
All other transportation	10,113,150	12,229,702	6,032,891	7,212,736	750,769	942,698	3,329,490	4,074,268
Incidental	5,769,712	7,550,298	3,289,049	3,970,395	771,689	1,274,991	1,708,974	2,304,912
Joint facility—Cr.	771,503	920,803	255,661	301,484	137,350	166,468	378,492	452,851
Joint facility—Dr.	264,634	259,453	69,588	73,193	19,631	25,542	175,415	160,718
Railway operating revenues	290,028,926	376,246,460	136,759,807	170,659,625	53,110,556	68,978,642	100,158,563	136,608,193
Expenses:								
Maintenance of way and structures	31,203,252	46,734,149	13,883,230	19,616,402	6,459,998	9,265,897	10,860,024	17,851,850
Maintenance of equipment	58,666,974	75,791,906	26,840,873	35,021,759	10,452,412	13,645,171	21,373,689	27,124,976
Traffic	8,502,338	9,948,781	3,295,344	3,812,517	1,579,423	1,887,514	3,627,571	4,248,750
Transportation	107,910,165	140,316,490	51,841,974	66,466,216	17,608,899	23,542,227	38,459,292	50,308,047
Miscellaneous operations	2,552,163	3,706,975	1,303,744	1,784,593	316,922	530,923	931,497	1,391,459
General	13,996,326	15,730,345	6,169,612	6,865,269	2,386,517	2,695,758	5,440,197	6,169,318
Transportation for investment—Cr.	349,053	612,043	126,172	102,870	18,296	49,055	204,585	460,118
Railway operating expenses	222,482,165	291,616,603	103,208,605	133,463,886	38,785,875	51,518,435	80,487,685	106,634,282
Net revenue from railway operations	67,546,761	84,629,857	33,551,202	37,195,739	14,324,681	17,460,207	19,670,878	29,973,911
Railway tax accruals	25,546,763	27,413,652	10,446,563	10,814,642	4,824,048	5,610,353	10,276,152	10,988,657
Uncollectible ry. revenues	94,703	73,641	45,234	37,423	10,768	12,267	38,701	23,951
Railway operating income	41,905,295	57,142,564	23,059,405	26,343,674	9,489,865	11,837,587	9,356,025	18,961,303
Equipment rents—Dr. balance	6,954,718	8,326,268	3,498,546	4,004,492	402,043	811,368	3,054,129	3,510,408
Joint facility rent—Dr. balance	2,661,277	2,338,112	1,426,659	1,229,788	204,456	193,342	1,030,162	914,982
Net railway operating income	32,289,300	46,478,184	18,134,200	21,109,394	8,883,366	10,832,877	5,271,734	14,535,913
Ratio of expenses to revenues (per cent)	76.71	77.51	75.47	78.20	73.03	74.69	80.36	78.06

FOR THREE MONTHS ENDED WITH MARCH, 1932 AND 1931

Average number of miles operated	242,047.29	242,178.92	60,124.25	60,212.21	46,161.47	46,101.54	135,761.57	135,865.17
Revenues:								
Freight	[c] $638,837,340	$825,883,923	$283,480,928	$357,600,738	$126,777,359	$161,035,816	$228,579,053	$307,247,369
Passenger	106,303,629	146,938,691	62,751,144	81,818,100	13,691,331	21,701,902	29,861,154	43,418,689
Mail	24,751,114	26,367,796	9,699,606	10,079,078	4,258,630	4,494,537	10,792,878	11,794,181
Express	13,934,070	19,833,898	6,122,903	7,910,677	2,796,169	3,717,303	5,014,998	8,205,918
All other transportation	[e] 29,300,801	35,436,105	17,306,619	20,591,430	2,086,118	2,754,601	9,908,064	12,090,074
Incidental	17,877,353	22,467,199	10,152,528	12,077,793	2,363,611	3,505,197	5,361,214	6,884,209
Joint facility—Cr.	2,393,501	2,809,297	788,561	919,952	404,320	478,980	1,200,620	1,410,365
Joint facility—Dr.	782,076	778,712	201,939	225,249	58,747	75,345	521,390	478,118
Railway operating revenues	832,615,732	1,078,958,197	390,100,350	490,772,519	152,318,791	197,612,991	290,196,591	390,572,687
Expenses:								
Maintenance of way and structures	90,402,990	131,827,294	39,652,382	57,027,007	19,295,211	27,304,681	31,455,397	47,495,606
Maintenance of equipment	171,780,778	224,979,741	78,169,394	104,528,054	31,257,816	40,540,338	62,353,568	79,911,349
Traffic	25,843,857	29,918,061	9,946,249	11,420,792	4,890,251	5,801,341	11,007,357	12,695,928
Transportation	325,679,806	414,171,506	154,846,879	196,482,681	52,946,830	69,155,496	117,886,097	148,533,329
Miscellaneous operations	8,091,981	11,220,495	4,084,104	5,422,209	1,046,243	1,582,701	2,961,634	4,215,585
General	42,215,466	47,374,174	18,658,215	20,668,858	7,220,623	8,155,162	16,336,628	18,550,154
Transportation for investment—Cr.	911,704	1,618,202	312,386	291,607	72,776	130,241	526,542	1,196,354
Railway operating expenses	663,103,174	857,873,069	305,044,837	395,257,994	116,584,198	152,409,478	241,474,139	310,205,597
Net revenue from railway operations	169,512,558	221,085,128	85,055,513	95,514,525	35,734,593	45,203,513	48,722,452	80,367,090
Railway tax accruals	74,628,282	80,965,817	30,216,424	31,260,073	14,136,807	16,444,283	30,275,051	33,261,461
Uncollectible ry. revenues	231,922	220,230	91,919	110,857	30,158	31,183	109,845	78,190
Railway operating income	94,652,354	139,899,081	54,747,170	64,143,595	21,567,628	28,728,047	18,337,556	47,027,439
Equipment rents—Dr. balance	20,901,205	24,111,981	10,770,819	12,240,055	1,374,562	1,803,497	8,755,824	10,068,429
Joint facility rent—Dr. balance	7,722,675	7,253,944	4,119,833	3,912,941	746,307	720,377	2,856,535	2,620,626
Net railway operating income	66,028,474	108,533,156	39,856,518	47,990,599	19,446,759	26,204,173	6,725,197	34,338,384
Ratio of expenses to revenues (per cent)	79.64	79.51	78.20	80.54	76.54	77.13	83.21	79.42

[a] Includes $6,007,388 increase from "Ex Parte 103."
[b] Includes $104,237 increase from "Ex Parte 103."
[c] Includes $15,448,332 increase from "Ex Parte 103."
[d] Deficit or other reverse items.
[e] Includes $282,924 increase from "Ex parte 103."

would have given it a connection with the Norfolk & Western. "Thus," the court said, "it would become a connecting link in a new through route which would be strongly competitive with existing trunk lines leading from Florida and the Southeast to the northern gateways reached by the Norfolk & Western." Chief Justice Hughes took no part in the disposition of the case by the court because he had represented the electric line before the commission.

Do You Carry A Green Flag?

Men who keep their minds on their jobs will not walk on tracks; the man who does walk on the track in yards is liable to find himself followed noiselessly by a freight car and is in danger of being a subject for the ambulance. This is the chief message of the June circular of the Safety Section, A. R. A. which has been issued by L. G. Bentley, chairman of the Committee on Education. The danger incident to this practice is such a real one that the circular pictures the careless man as "carrying signals for the ambulance." A green signal indicates that the second section is as sure to come as the first one, and the thought of the committee is that this element of certainty applies in the case of the careless yard man. The idea was suggested by J. S. Keath, a conductor on the Wabash.

The circular is embellished with a half dozen other pictures of carelessness in freight train work, in track repairs, and in freight house operations. Sarcastic observations are offered in connection with some of these pictures. For example, "Are you not proud of your offer to help build the new hospital?" "How many crippled truckers do you think it will take to pay for the doctor's vacation in Europe?" "Don't you know that when you pull instead of push on your brake stick you are really putting in a call for the hearse?"

Grain Rate Hearing at Kansas City

Testimony regarding agricultural conditions is being presented at Kansas City, Mo., in the western grain rate case which was reopened at Chicago on April 20 before Examiners Arthur R. Mackley and George J. Hall of the Interstate Commerce Commission. While witnesses for western carriers seeking increases in rates on grain and grain products presented testimony at Chicago from April 20 to May 6, the presentation of agricultural testimony was begun on May 11 and will probably last three weeks. The first witness at Kansas City was Dr. L. H. Bean, senior economist of the Bureau of Agricultural Economics of the Department of Agriculture, who was summoned by the Interstate Commerce Commission. His testimony dealt with the decline in gross income from farm production, which he estimated at 40 per cent in three years, the effect of world-wide depression on wheat growers, the purchasing power of the farmer and taxes and mortgages on farm property.

Following the testimony of Mr. Bean, witnesses for the state railroad commissions also testified as to the economic status of farmers in various states. Dr. Alva H. Benton, director of agricultural economics at the North Dakota Agricultural college, and Dr. J. T. Sanders, head of the department of agricultural economics of the Oklahoma Agricultural and Mechanical college, presented figures to show that the farmers operated their farms at a loss during 1930 and 1931.

Labor Differs on Cure for Economic Troubles

(Continued from page 882)

and Steamship Clerks, the International Association of Machinists, and the International Association of Sheet Metal Workers, declared the belief that "the war debt plan in question" had been "hastily conceived" and was "unsound in principle" and that "it would shift an additional burden to the American taxpayer and American industry, thus retarding economic recovery." It was also asserted that this statement had the approval of eight other railway labor organizations and affiliated groups.

Savings from Railway Amalgamation in Canada

That about $50,000,000 a year could be saved in operation if the Canadian Pacific and Canadian National were merged was a view held a long time ago by Lord Shaughnessy, then head of the C. P. R., and his view was supported the other day by Sir Henry Thornton, president of the Canadian National when asked for his views about joint operation before the House of Commons Committee on National Railways and Shipping at Ottawa. It was made clear by Sir Henry and by others who discussed this delicate question that they were expressing only their personal views and then with some diffidence because this question is one of the central issues before the Royal Commission on Transport, whose report to the Dominion Government is due some time this summer.

The question was propounded in the committee at Ottawa last week to Sir Henry by Hon. William D. Euler, a Liberal, former Cabinet Minister and an aggressive public ownership advocate.

Sir Henry emphasized that he was not considering any question of strategy or relief from monopoly. "The fruits of amalgamation," he continued, "are more or less elusive in some ways. For example, the Railway Consolidation Act which was passed in England, and which amalagamated some 125 or 150 companies into four companies anticipated large savings, but when they came down to actually realize those savings they found it much more difficult than was imagined at first."

Southwest Shippers' Board

The Southwest Shippers' Advisory Board will hold its ninth annual meeting at Enid, Okla., on May 24. Among the subjects to be given consideration at the meeting will be Railways and Waterways; a report of the Motor Transportation committee, involving a proposed resolution on trucks; and a discussion of pertinent factors relating to the season's wheat crop movement. In the evening, the Oklahoma Grain Dealers' Association will hold its annual banquet.

Rock Island Magazine Suspended

The Chicago, Rock Island & Pacific, owing to the necessity for immediate reduction in expenses, will suspend the publication of its employees' magazine with the May-June issue.

Nine Steps to Increase Summer Travel

Nine steps, all designed to stimulate passenger travel from Chicago to the West during the summer months and involving faster schedules, lower rates and escorted tours, were outlined in a recent statement made by C. A. Cairns, passenger traffic manager of the Chicago & North Western. They are as follows:

1. The establishment of a $65 round-trip rate, good in coaches between Chicago and California and the Pacific Northwest; on sale daily during June, July and August; a 55 per cent reduction from the ordinary round-trip rate.

2. A cut of one-third of a day from both the going and returning running time to Yellowstone Park from Chicago, effective June 17 to September 17, making the trip to the park one of slightly over 41 hrs. and the return trip 42 hrs. 5 min.

3. The elimination of the $18 additional cost from California tickets that read going or returning via the Pacific Northwest. The rate from Chicago now is $90.30 from May 15 to October 15 with a final return limit of October 31, whether the patron returns direct or via Seattle, Portland or the like.

4. The extension of the $40 one-way coach rate and the $65 tourist sleeper rate which has been in force for a year and a half from Chicago to California to include tickets between Chicago and the North Pacific Coast.

5. A reduction in vacation rates from points east of Chicago to points in the West, making these rates the lowest in many years.

6. The establishing of a round-trip coach rate of $20.50 to Denver, Colo., and $17.50 to Rapid City, S. D., good with a seven-day return limit from Chicago on July 2 and 30 and August 13 and September 3.

7. The establishing of the $30 rate to Colorado and the $25 rate to the Black Hills good with a 15-day return limit on four Saturdays this summer and good on four additional Saturdays with a 7-day return limit.

8. A cut of five hours off the running time of escorted tours to Zion, Bryce Canyon and the Grand Canyon and a general tightening up of escorted tour schedules to allow passengers a minimum amount of time on the train and a maximum amount at sight-seeing points.

9. A readjustment in prices on escorted tours to the Black Hills of South Dakota.

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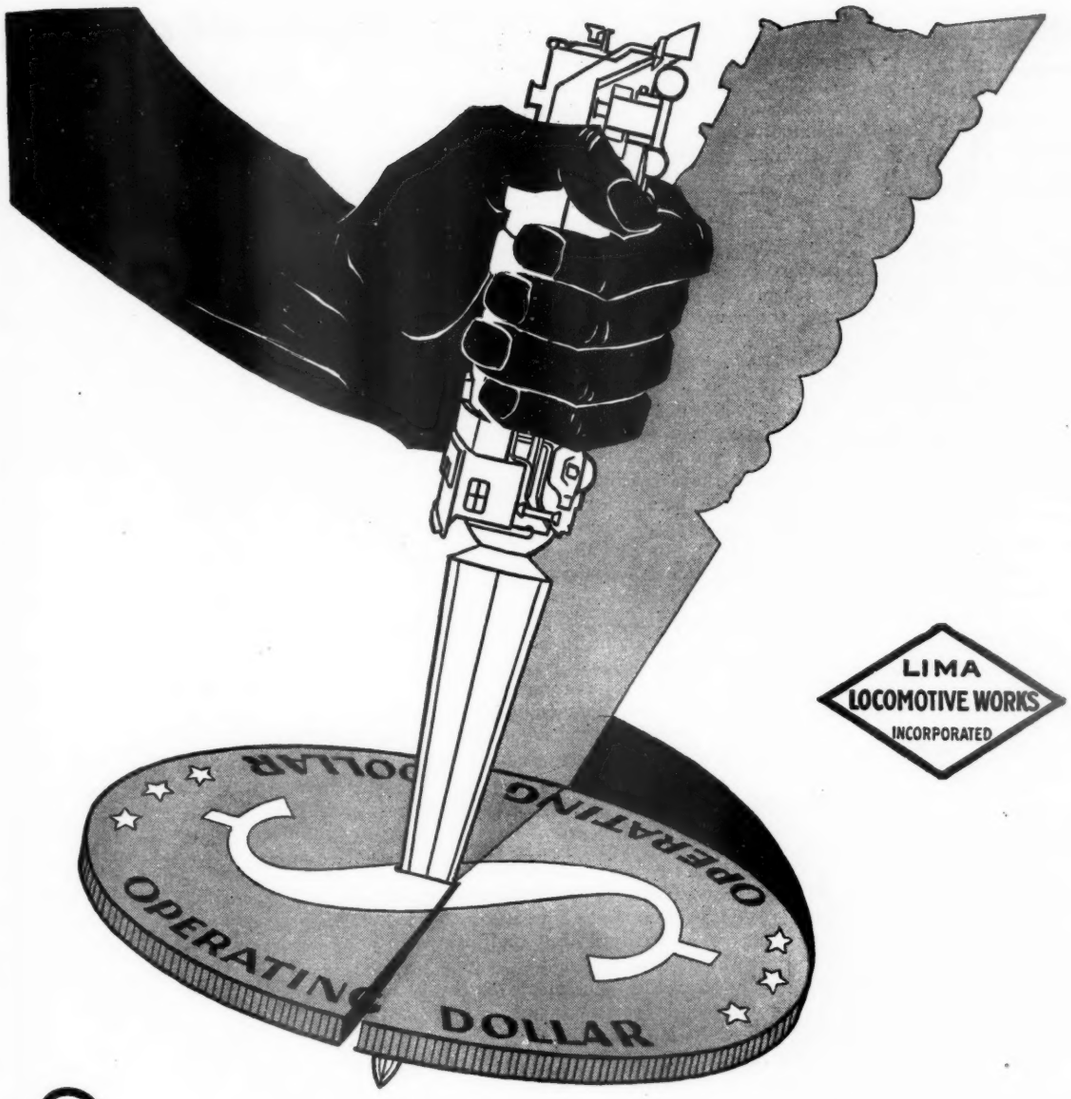

LIMA LOCOMOTIVE WORKS INCORPORATED

SUPER-POWER

LOCOMOTIVES CUT OPERATING COSTS

35 Super-Power Locomotives on one division of a certain railroad decreased direct operating costs 34% when compared with a greater number of Mikado and Santa Fe type locomotives most of which were only five years old and none of which were over ten years old.

Details of this saving will be described in subsequent advertising.

Super-Power Locomotives produce maximum gross ton miles per train hour with minimum fuel consumption.

Foreign

Commonwealth Railways of Australia in 1930-31

The Commonwealth Railways of Australia, during the year ending June 30, 1931, matched a gross revenue decline of $462,600 with a saving in operating expenses of $467,300 and were thus able to hold the year's operating loss to $728,000 as compared with a 1929-30 loss from operations of $732,700. This reduction of the operating deficit by $4,700, however, was more than offset by the $47,900 by which the 1930-31 interest charges were greater than those of the previous year and the 1930-31 deficit after interest charges was therefore $3,123,100 as against a comparable 1929-30 figure of $3,079,900.

The total deficit for the year ending June 30, 1930, calculated from that year's report, was $3,330,300 since the figures then presented included a sinking fund charge of $250,400. This latter is absent from the recapitulation of the 1929-30 figures in the current report and no such item appears in the figures for the year under review. Comparative statistics of operating and financial results for the past two fiscal years are as follows:

	1930-31	1929-30
Miles of line	2,145	2,145
Investment in road and equipment	$75,174,300	$74,853,700
Gross revenues	1,505,500	1,968,100
Operating expenses	2,233,500	2,700,800
Operating loss	728,000	732,700
Interest charges	2,395,100	2,347,200
Sinking fund	.....	250,400
Deficit	3,123,100	3,330,300

Note: Par value ($4.87) used in converting pounds to dollars.

It will be seen from the foregoing that interest charges during each of the past two fiscal years have exceeded gross revenues. In no year since 1910-11, when the Commonwealth Railways comprised 624 miles of line as compared with the 2,145 now operated, has there been a surplus after interest charges and in only three years—1926-27, 1927-28 and 1928-29— has there been reported any net revenue from operations. The operating ratio for the past year stood at 148.36 as against 137.23 in 1929-30 and 99.05 in 1928-29.

None of the four units comprising the Commonwealth Railways—the Trans-Australia (1,051 miles), the Central Australia (772 miles), the North Australia (317 miles) and the Federal Territory (5 miles)—has reported any net revenues in either of the past two years; the Trans-Australia which alone in 1928-29 absorbed the operating losses of the other three units and accounted for that year's net revenue of $26,500, reported for 1930-31 an operating deficit of $262,000.

The report emphasizes the fact that, "Notwithstanding the adverse business conditions resulting in such a serious loss in earnings the working expenses were so reduced that the actual loss (operating) for the year was lower than for the previous year." Some of the reduction in expenses is due to a wage cut which became effective November 1, 1930, "due to a fall in the cost of living." Also, there was a reduction of about 10 per cent in the average number of employees. Other substantial savings were made, in maintenance of way and equipment expenses, in the charges for slip and flood repairs and in fuel and dining service costs.

Micheline Rail Car Speeds Service on French Run

The initial service of a Micheline rail car, now in regularly scheduled operation between Meziers and Givet, France, has effected time savings of 41 minutes over the previous steam train schedule, according to a recent statement of the Edward G. Budd Manufacturing Company, Philadelphia, Pa.

"The Micheline, pneumatic-tired rail car, has been placed in regular operation between these two French cities, a distance of forty miles," the statement said. "Previously the steam train left Meziers at 8:50 and arrived at Givet at 10:28. The Micheline now leaves at the same hour but arrives at Givet at 9:47."

Equipment and Supplies

PASSENGER CARS

THE MEXICAN RAILWAY has received bids on six first class and ten second class coaches.

THE PENNSYLVANIA has ordered from the Edward G. Budd Manufacturing Company, Philadelphia, Pa., a pneumatic-tired rail motor car and trailer unit of stream-line design and light-weight shot-welded stainless steel construction. The motor car will be powered by a 170 h.p. Budd-Junkers diesel engine; it will contain baggage and smoking compartments and, with the trailer, will have a capacity of 76 passengers. The equipment is to be so designed that the motor car and the trailer will comprise one unit weighing 50,000 lb., as compared with 130,000 lb., the weight of the average 88-passenger steel railway car.

IRON & STEEL

THE TOLEDO TERMINAL RAILROAD is inquiring for 150 tons of structural steel for a bridge at Toledo, Ohio.

THE SOUTHERN PACIFIC has ordered 441 tons of structural steel for miscellaneous bridge work from the Virginia Bridge & Iron Co.

SIGNALING

THE CANADIAN PACIFIC has been authorized by the Board of Railway Commissioners to build an interlocking plant at Fergus, Ontario, about 70 miles northwest of Toronto, where the line crosses the Canadian National.

MISCELLANEOUS

THE ST. LOUIS SOUTHWESTERN has reopened its shops at Pine Bluff, Ark.,

* * * *

Two Electric Locomotives Ready for Shipment to the U. S. S. R.

Two complete electric locomotives, the first of eight, for service on the Transcaucasian Railway in the Union of Socialistic Soviet Republics, have just been shipped from the Erie (Pa.) works of the General Electric Company. Weighing 145 tons each and requiring six flat cars to transport them from the factory to New York, the locomotives will go by ship from New York to the port of Batum, through the Mediterranean Sea. The Transcaucasian Railway is part of the government-owned lines of the U. S. S. R. It runs through the Suram pass, a section about 40 miles in length, with heavy grades. The locomotives, intended for both freight and passenger service, are of the six-axle type and will be capable of coupling together to produce units of 290 tons and 5400 horsepower. They are equipped for regenerative braking. Electric power for these locomotives will be obtained from two hydroelectric generating plants, connected by high-tension lines with three substations which supply 3,000-volt direct-current power to the distribution system. Tests of the locomotives are expected to be carried out during June, and the complete electrical operation of the mountain section is scheduled to begin in October.

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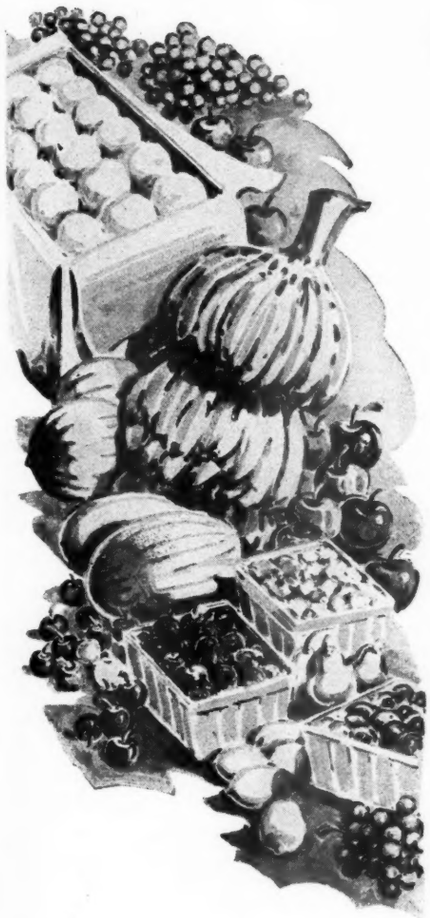
PERISHABLES
ARE KEPT MOVING BY
BOOSTER LOCOMOTIVES

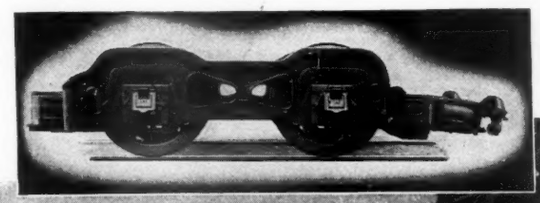


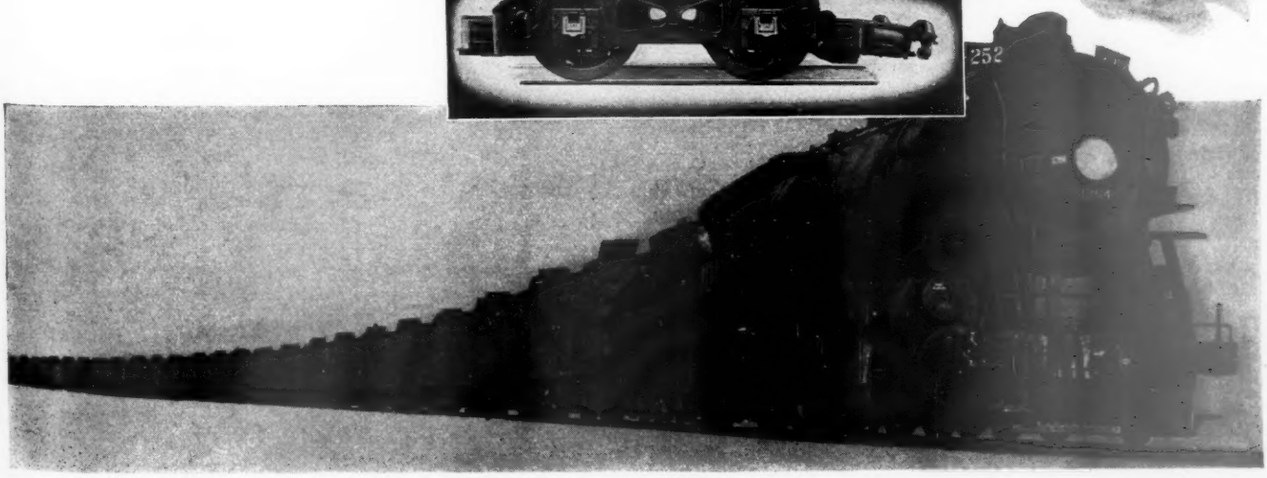
THE LOCOMOTIVE BOOSTER

• Fruit growers throughout the country depend upon transportation to deliver their products in good condition to widely separated markets. "Soft-fruits", in particular, present difficulties. They must not be damaged—train schedules must be kept to assure proper re-icing in transit.

The Locomotive Booster has helped develop this service to a high state of efficiency. It helps start long freights without shock and damage to fruit. The added power speeds up transportation through the yards, over heavy grades, and helps bring such freight through on time.

The Booster serves the fruit-grower well and at the same time provides the railroads using it with low cost haulage per ton mile that makes this exacting service profitable.





FRANKLIN RAILWAY SUPPLY CO., INC.

NEW YORK CHICAGO MONTREAL

returning 200 men to work on a 5-day basis.

THE NORFOLK & WESTERN has placed in service on its Norfolk and Scioto divisions two Mole ballast cleaning machines which were bought from the Railway Maintenance Corporation, Pittsburgh, Pa. The road now has a total of nine machines of the same type in operation.

Supply Trade

F. S. Wilcoxen, vice-president of **The Standard Locomotive Equipment Company,** has moved his headquarters from 1316 McCormick building, Chicago, to 1819 Clinton street, Toledo, Ohio.

Charles S. Bilyeu, formerly with Sanderson & Porter, New York, and R. W. Hunt Company, Chicago, has become associated with the firm of **Robinson & Steinman,** consulting engineers, 117 Liberty street, New York City.

E. F. Gohl, formerly manager of the Los Angeles district of the **McClintic-Marshall Corporation,** has been appointed Pacific Coast manager, with office at Twentieth and Illinois streets, San Francisco, Cal. He will have charge of all activities of the McClintic-Marshall Corporation on the Pacific Coast. Mr. Gohl was graduated from Lehigh University in 1907, and has been with the McClintic-Marshall Corporation since that time.

The Caterpillar Tractor Company, Peoria, Ill., has recently added 24 dealers to its sales organization at the following points: Brandon, Man.; Harrisburg, Pa.; San Antonio, Tex.; Syracuse, N. Y.; Milwaukee, Wis., and Madison; Saskatoon, Sask.; Toronto, Ont., and Ottawa; Harlingen, Tex.; Enid, Okla.; Des Moines, Iowa; Augusta, Ga.; Frederickton, N. B.; Grand Forks, N. D.; Shamokin, Pa.; Irvington, N. J.; Omaha, Neb.; Council Bluffs, Iowa; Cincinnati, Ohio; Plainview, Tex.; Nuevo Laredo, Tamps., Mex.; Billings, Mont., Sidney and Miles City; Quincy, Ill.; and Cleveland, Ohio.

George P. Nichols & Brother, Chicago, have acquired all the physical assets, equipment, patents and good will of the Stearns-Stafford Roller Bearing Company, Lawton, Mich., and will carry on the manufacture and sale of that company's products through the **Stearns-Stafford Roller Bearing Division of the George P. Nichols & Bro., Inc.** The Nichols organization, started in 1894, was a partnership formed by George P. Nichols and Samuel F. Nichols which continued until 1928, when George P. Nichols retired on account of ill health. In 1900 the organization began the manufacture of transfer tables and electric turntable tractors and their equipment is now used on many railroads in the United States and Canada. The Stafford Roller Bearing Car Truck Corporation, which later became the Stearns-Stafford Roller Bearing Company, was organized in 1920 and was one of the pioneers in the application of roller bearings to railroad rolling stock, and a pioneer in the application of roller bearings to scale test cars and to turntable trucks in the conversion to three-point suspension. A new corporation, George P. Nichols & Bro., Inc., supplants the former partnership and proposes to cover the field of bearings for rolling stock and turntables and equipment in heavy industrial service. They have acquired the patent rights on a split axle, equipped completely with roller bearings designed to save power and reduce the wear on wheels and track. The general office and factory will remain at 2139 Fulton street, Chicago. The manufacture of roller bearings will be carried on for the present at Lawton, Mich.

D. W. Russell, whose promotion to vice-president in charge of railway sales of the **Fargo Motor Corporation,** Detroit, Mich., was reported in the *Railway Age* of May 14, was born at Jackson, Tenn. He has been connected with the bus and truck industry since 1914, when he entered the sales department of the White Company at Cleveland, Ohio. From 1924 to 1928, he was manager of the White Company branch in Little Rock, Ark., and from 1928 until last year, he was vice-president and general manager of the Southwestern Transportation Company, motor bus and truck operating subsidiary of the St. Louis Southwestern. In August,

D. W. Russell

1931, Mr. Russell joined the organization of the Fargo corporation as railroad liaison representative from which position he was promoted to vice-president in charge of railway sales. In his new capacity he will supervise the sale of all Fargo products to railroads and their affiliated companies.

John H. Locke, who has been elected a vice-president of the **General Steel Castings Corporation,** Eddystone, Pa., was born on October 19, 1888, at Cambridge, Mass. He was graduated in 1908 from Massachusetts Institute of Technology where he specialized in electro-chemistry, later doing graduate work at Harvard University. In 1910 he joined the Westinghouse Lamp Company, first doing research work and later was engaged in both research and production work. He subsequently served with a lamp company at St. Louis, where he was engaged in the manufacture of electric lighting equipment. In June, 1912, he went to the Commonwealth Steel Company, serving for about a year as a construction draftsman in the engineering department, after which for several years he was engaged in research work.

John H. Locke

In 1917, he was appointed assistant to the general manager of the Commonwealth Steel Company and in August, 1929, assistant general manager of the Commonwealth division of the General Steel Castings Corporation with headquarters at Granite City, Ill. He was appointed general manager of the same division in June, 1931, and the following August was appointed manager of operations of all plants of the corporation, with headquarters at Eddystone, which position he held at the time of his recent election as vice-president.

OBITUARY

Jens G. L. Schreuder, who retired as chief engineer of the Union Switch & Signal Company in 1915, died at Edgewood, Pa., on May 1.

Edward B. Leigh, president of the Chicago Railway Equipment Company, died on May 17 at his ranch in Kerr County, Texas, having been in failing health for some months.

Frank R. Kromroy, for the past nine years South American representative of the Westinghouse Air Brake Company, died on May 13, in his forty-seventh year at Milwaukee, Wis., from heart trouble. Mr. Kromroy became ill in South America last fall and returned to his home in Wisconsin, hoping to regain his health. He was a native of Wisconsin and began work in 1902 as a clerk in the office of the superintendent

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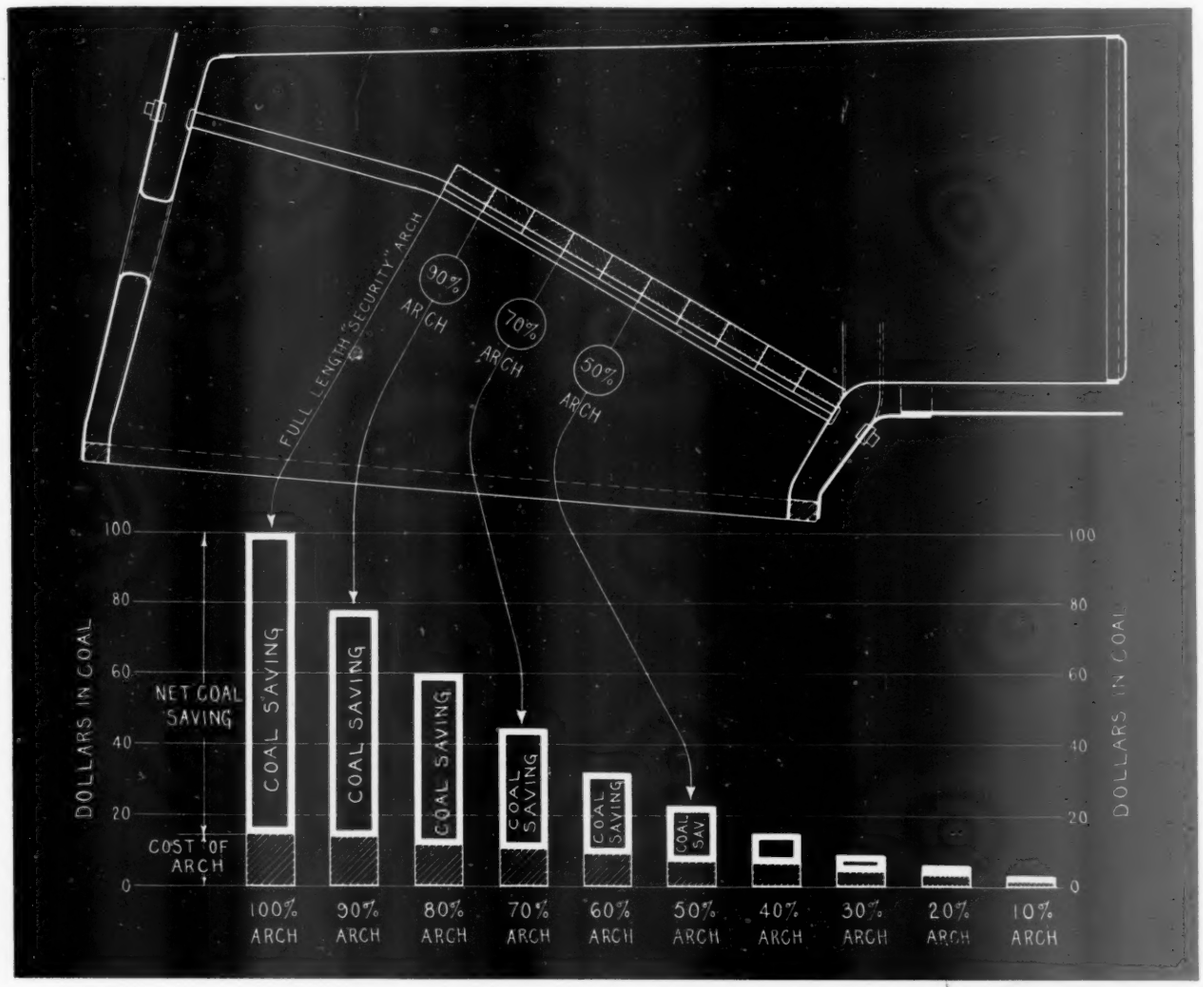


THE EFFECT OF ABBREVIATED ARCHES ON FUEL SAVING

The Last Course Is The Most Important

STOKER firing with all its desirable economies makes a long Arch a necessity. With stoker firing the last course of Arch brick takes on increased importance.

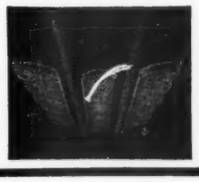
Any effort to shorten the Arch and save brick means a sharp rise in fuel consumption.

Today, with every dollar of expense a vital matter, true economy means taking full advantage of proved money savers such as the locomotive Arch.

Any skimping on the Arch is bound to show in the fuel bill and the ratio is about $10 loss for every $1 of expense that is avoided.

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

HARBISON-WALKER REFRACTORIES CO.
Refractory Specialists



AMERICAN ARCH CO.
INCORPORATED
Locomotive Combustion Specialists

of bridges and buildings of the Chicago, St. Paul, Minneapolis & Omaha, at Altoona, Wis. In 1904, he served as fireman on the same road and was promoted to an engineman in 1910. Mr. Kromroy entered the service of the Westinghouse Air Brake Company in 1923, and shortly after was sent by the company to South America.

Gilbert E. Ryder

Gilbert E. Ryder, vice-president of the Superheater Company, New York, died at his home at Larchmont, N. Y., on May 17 of heart failure. Mr. Ryder was born May 29, 1880, at Minneapolis, Minn. He was educated in the public schools of Sandwich, Ill., also at Tabor Academy, Marion, Mass., the University of Wisconsin and the University of Illinois. He began work as a special apprentice with the Chicago, Milwaukee & St. Paul, now the Chicago, Milwaukee, St. Paul & Pacific, and subsequently served consecutively as machinist and draftsman on that road; assistant mechanical engineer of the Briquette division, United States Geological Survey, Technical Branch; deputy smoke inspector of the City of Chicago; and associate editor of the Railway Review. In December, 1911, Mr. Ryder entered the service of the Superheater Company, New York, as a service engineer; he was subsequently appointed assistant to vice-president and in 1921 was

Gilbert E. Ryder

elected vice-president in charge of sales and service. Mr. Ryder was a member of a number of technical societies, including: The American Society of Mechanical Engineers; the International Railway Supply Men's Association, with which he served as committee chairman, member of the executive committee, vice-president and president (in connection with the Railway Fuel Association); the Railway Equipment Manufacturer's Association (in connection with the Traveling Engineers' Association). He served as president of the Railway Supply Manufacturers' Association for the years 1929 and 1930. Mr. Ryder also took a keen interest in civic and educational affairs. He was the author of a number of papers on superheated steam presented before railway clubs and published in technical magazines.

Construction

CANADIAN NATIONAL.—This road is planning the construction of a brick and concrete passenger station, 80 ft. by 26 ft., and of a frame freight shed, at Hebertville, Que., and the reconstruction of a brick and stone passenger station at Collingwood, Ont. The Hebertville project had been deferred from 1931, while the work at Collingwood is being undertaken to replace a station damaged by fire. In both cases, construction will begin in the near future, and will be carried out by company forces.

CINCINNATI UNION TERMINAL.—Bids for the construction of an ice plant to serve the various facilities of this company at Cincinnati, Ohio, will be opened on June 1.

LONG ISLAND.—This company has awarded to Foley Brothers, Inc., New York City, a contract amounting to $1,880,000 for work in connection with an extensive track elevation project designed to eliminate a number of grade crossings at Valley Stream, L. I., N. Y. Existing crossings of the railroad's Montauk division at Franklin, Rockaway and Horton avenues will be replaced by underpasses; and the same procedure will be followed in the removal of crossings on the West Hempstead branch at Scranton avenue and Merrick road, and on the Far Rockaway branch at Roosevelt avenue. The present Scranton avenue crossing of the Montauk division will be closed and traffic diverted through a new underpass to be constructed at Satterie avenue; while a new underpass will also be opened under the Far Rockaway branch at Conduit boulevard (Sunrise highway), to eliminate the Roosevelt avenue detour now required of vehicles using Conduit boulevard. Additional work to be carried out as a part of the general project includes the construction of a modern passenger station at Valley Stream and the transfer to Far Rockaway of the passenger lay-up yard now located at Valley Stream. These changes bring the estimated cost of the entire improvement to approximately $3,000,000. Fifty per cent of the cost will be paid by the Long Island Railroad, 49 per cent by the state of New York, and one per cent by Nassau county, where the work is located. Construction is to be completed by March 1, 1933. Approximately 12,900 tons of structural steel will be required for the track elevation, the steel contracts to be awarded by Foley Brothers.

NEW YORK, NEW HAVEN & HARTFORD.—This company has authorized the construction of a new bulkhead at its steamship wharf at Woods Hole, Mass., at an estimated cost of $37,000; and has also authorized the widening of an underpass at bridge 24.11, Buckland, Conn., at a cost of approximately $45,000, to accommodate state highway improvements.

PENNSYLVANIA.—Contracts for the construction of two cattle passes, both at West Thirty-eighth street, New York, have recently been awarded by this company. One of these passes, from the westerly street line of Twelfth avenue to the bulkhead line of Hudson river piers, including holding pens, etc., beyond this bulkhead line, will be installed by the Tilt-Hargan Company, New York, at a cost of $34,700; the other, costing about $43,800, and extending from the westerly street line of Twelfth avenue east across that avenue to a point approximately 80 ft. along the line of the tunnel from the easterly street line of Twelfth avenue, will be built by the Poirier & McLane Corporation, also of New York.

Financial

ALABAMA GREAT SOUTHERN.—*Omits Dividend.*—Directors have omitted the semi-annual dividend of $2 on common stock and reduced that on preferred from $2 to $1.50.

APALACHICOLA NORTHERN.—*R.F.C. Loan.*—The Interstate Commerce Commission has denied approval of this company's application for a loan of $200,000 from the Reconstruction Finance Corporation, saying that its past earnings and its prospect of earnings in the future do not justify a conclusion that it will be able to repay the loan within the time provided by the statute. The report pointed out that the declining revenues and present financial straits of the carrier "are not primarily or even largely due to the prevailing depression in general business" and said that present indications do not indicate a material revival of local traffic movement over its line.

BALTIMORE & OHIO.—*R.F.C. Loan Approved.*—The Interstate Commerce Commission on May 16 approved an additional loan of $25,500,000 to this company from the Reconstruction Finance Corporation, of which $8,000,000 is to pay secured 4 per cent short-term notes due May 25, and $17,500,000 is to pay one-half of the principal of $35,000,000 of unsecured 4 per cent short-term notes due August 10. The notes to be paid in full are one-year notes issued in large denominations and now held chiefly by bankers and financial institutions which largely participated in the financing of this issue in May, 1931, and the same interests are also important holders of the notes maturing in August. The commission had approved a loan of $7,000,000 to the B. & O. on March 30, to meet its most pressing requirements but postponed consideration of other amounts asked and the company on May 5 filed an amended application reducing the total amount asked from $55,000,000 to $32,500,000, stating that it had been in negotiation with certain of the holders of the notes due in August and was encouraged to believe that upon payment of 50 per cent of the principal of each of the notes, the balance could be extended for two years at 6 per cent. The commission's approval is on condition that the company furnish evidence

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300 H. P.
Total Weight
131,000 lb.
Tractive Power, Starting,
39,300 lb.

ALCO DIESEL LOCOMOTIVES

THE Alco Diesel Locomotive is much more than just another Oil-Electric.

Designed and built by an organization which has been cooperating with railway officials on locomotive design, almost since railroads were new, it naturally followed that the fullest consideration was given to the railroad man's operating and maintenance problems.

Therefore, when considering this new class of motive power, do not overlook ease of operation and maintenance.

These are important and attractive features of the Alco Diesel Locomotive.

American Locomotive Company
30 Church Street New York N.Y.

600 H. P.
Total Weight
200,000 lb.
Tractive Power, Starting,
60,000 lb.

that half the notes will be refinanced. The reduction in the amount originally asked includes an item of $1,000,000 to pay bank loans which came due on April 26 and were paid, and also $4,000,000 of miscellaneous additions and betterments. These two loans to the Baltimore & Ohio represent the largest amount approved by the commission so far for any one railroad, although the New York, Chicago & St. Louis filed an application for $33,000,000. The Pennsylvania had also applied for $55,000,000 but later reduced the amount to $27,500,000. As collateral for the two loans the B. & O. is to pledge $37,500,000 of its refunding and general mortgage 6 per cent bonds, $5,945,000 par value of preferred stock and $10,493,200 of common stock of the Buffalo, Rochester & Pittsburgh, $3,980,600 of preferred stock of the Buffalo & Susquehanna, and 400,000 shares of common stock of the Reading.

The company has applied to the commission for authority to issue $17,500,000 of two-year 6 per cent notes in renewal of half of those due August 10.

BIRMINGHAM & SOUTH EASTERN.—*R.F.C. Loan.*—The Interstate Commerce Commission has approved a loan of $41,300 to this company from the Reconstruction Finance Corporation to enable it to pay taxes and current bills, but declined to approve part of the application, which was for $50,000, on the ground that a part of the loans and bills payable is an obligation of the carrier in which one of its employees is interested and that "that individual is indebted on open account to the carrier in a much greater sum."

The commission also addressed a letter to the Finance Corporation calling attention to the fact that in its recapture report on this road the salaries paid to some of the officers had been found to be excessive and, although it was stated that the salaries had been reduced, the attention of the corporation was directed to the matter "having in view the thought that the corporation may desire to make some provision in connection with the loan which would prevent diversion of the proceeds of it or of the carrier's other funds into operating expenses by payment in the future of such excessive salaries while the loan remains unpaid."

CHICAGO, ROCK ISLAND & PACIFIC.—*I. C. C. Asked to Authorize Consolidation.*—Authority for the consolidation with this company of the properties of eleven subsidiaries, a total of 7,833 miles, is asked in an application filed with the Interstate Commerce Commission, stating that such a step would result in substantial savings in operating expenses through the elimination of separate operating organizations, simplification of the corporate structure of the system, and a simplification of its financing. The subsidiaries, which are controlled by stock ownership or lease or both, are: the St. Paul & Kansas City Short Line; the Choctaw, Oklahoma & Gulf; the Rock Island, Arkansas & Louisiana; the Chicago, Rock Island & Gulf; the Morris Terminal; the Peoria Terminal; the Peoria, Hanna City & Western; the Rock Island & Dardanelle; the Rock Island, Stuttgart & Southern; the Rock Island Memphis Terminal; and the Rock Island Omaha Terminal. Neither the name nor the corporate identity of the parent company will be changed and it is not proposed to issue any stock or other securities in connection with the authority sought. The Pacific company will acquire by purchase the entire railroad and other property, and all corporate rights, privileges and franchises of each of the other applicants, and as consideration it will assume the funded debt and other obligations of each. It also asks authority to extend its operations over the lines of the Chicago, Rock Island & Gulf, the Peoria Terminal and the Hanna company. The application states the value of the system properties as $512,939,972, based on the commission's valuation as of 1915 of $326,157,941, plus net additions and betterments.

CINCINNATI UNION TERMINAL.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue and reissue to July 1, 1933, $5,000,000 of short-term promissory notes, the proceeds to be used for the construction of the company's terminal.

COLORADO & SOUTHERN.—*Annual Report.*—The 1931 annual report of this company shows net income after interest and other charges of $522,354, as compared with net income of $1,203,147 in 1930. Selected items from the Income Statement follow:

	1931	1930	Increase or decrease
Average Mileage Operated	2,003.99	2,006.65	— 2.66
RAILWAY OPERATING REVENUES	$16,837,180	$20,666,913	—$3,829,733
Maintenance of Way	2,094,095	3,069,615	— 975,520
Maintenance of Equipment	2,845,049	3,677,443	— 832,394
Transportation	5,534,618	6,975,690	— 1,441,072
TOTAL OPERATING EXPENSES	11,866,795	15,219,135	— 3,352,340
Operating Ratio	70.48	73.64	— 3.16
NET REVENUE FROM OPERATIONS	4,970,385	5,447,778	— 477,393
Railway tax accruals	1,304,416	1,412,981	— 108,565
Railway operating income	3,659,533	4,026,442	— 366,909
Hire of Equipment —Net Dr.	473,761	438,997	+ 34,764
Joint facility rents—Net Dr.	217,591	161,533	+ 56,058
NET RAILWAY OPERATING INCOME	2,968,180	3,425,912	— 457,732
Non-operating income	384,766	361,225	+ 23,541
GROSS INCOME	3,352,946	3,787,137	— 434,191
Interest on funded debt	2,737,627	2,244,627	+ 493,000
TOTAL DEDUCTIONS FROM GROSS INCOME	2,830,592	2,583,990	+ 246,602
NET INCOME	522,354	1,203,147	— 720,793

FREDERICKSBURG & NORTHERN.—*R.F.C. Loan.*—The Interstate Commerce Commission on May 13 approved a loan of $15,000 to this company from the Reconstruction Finance Corporation.

HOBART ESTATE RAILROAD.—*Acquisition.*—The Southern Pacific has taken over this railroad which runs from Hobart Mills, Cal., to Truckee, a distance of seven miles, and henceforth, the railroad will be known as the Hobart Southern.

JEFFERSON & NORTHWESTERN.—*R.F.C. Loan Denied.*—The Interstate Commerce Commission on May 16 denied approval of this company's application for a loan of $40,000 from the Reconstruction Finance Corporation, on the ground that the prospective earning power and the security offered are not such as to afford reasonable assurance of repayment.

MARYLAND & PENNSYLVANIA.—*R.F.C. Loan.*—The Interstate Commerce Commission on May 12 approved a loan of $100,000 to this company from the Reconstruction Finance Corporation, on an application for $150,000, to be applied toward payment of $202,450 of York & Peach Bottom Railway first mortgage bonds due May 1.

MERIDIAN & BIGBEE RIVER.—*R.F.C. Loan.*—The Interstate Commerce Commission on May 12 approved a loan of $600,000 to this company from the Reconstruction Finance Corporation, to aid in financing the construction of an extension from Meridian, Miss., to Cromwell, Ala., on condition that it be guaranteed by the Illinois Central and the Louisville & Nashville or by the Western of Alabama; that $500,000 of common stock be issued to retire a like amount of first mortgage 6 per cent bonds; and that $600,000 of bonds be issued under a new mortgage to be pledged as security for the loan. The company had asked for a loan of $1,250,000, proposing to retire the first mortgage bonds, on which no interest had been paid since 1929.

This requirement that the loan be guaranteed is on the theory that the construction of the extension will provide the L. & N. and the I. C. or the Western of Alabama with an additional route should they make use of it as a bridge line and connecting link.

NEW YORK CENTRAL.—*Abandonment.*—This company and the Raquette Lake have applied to the Interstate Commerce Commission for authority to abandon the line of the latter from Carter, N. Y., to Raquette Lake, 18.13 miles.

NEW YORK CENTRAL.—*Omits Common Dividend.*—Directors have omitted the usual quarterly dividend on common stock, maintained since 1870. The annual rate was reduced from 8 to 6 per cent a year ago and to 4 per cent in November.

PENNSYLVANIA.—*Postpones Dividend Action.*—Directors of this company have postponed action on the quarterly dividend due at this time. Previously the stock paid 4 per cent annually, the rate having been reduced to that ratio from 6 per cent. In the first half of 1931 the rate was 8 per cent. The company has paid dividends regularly since 1847.

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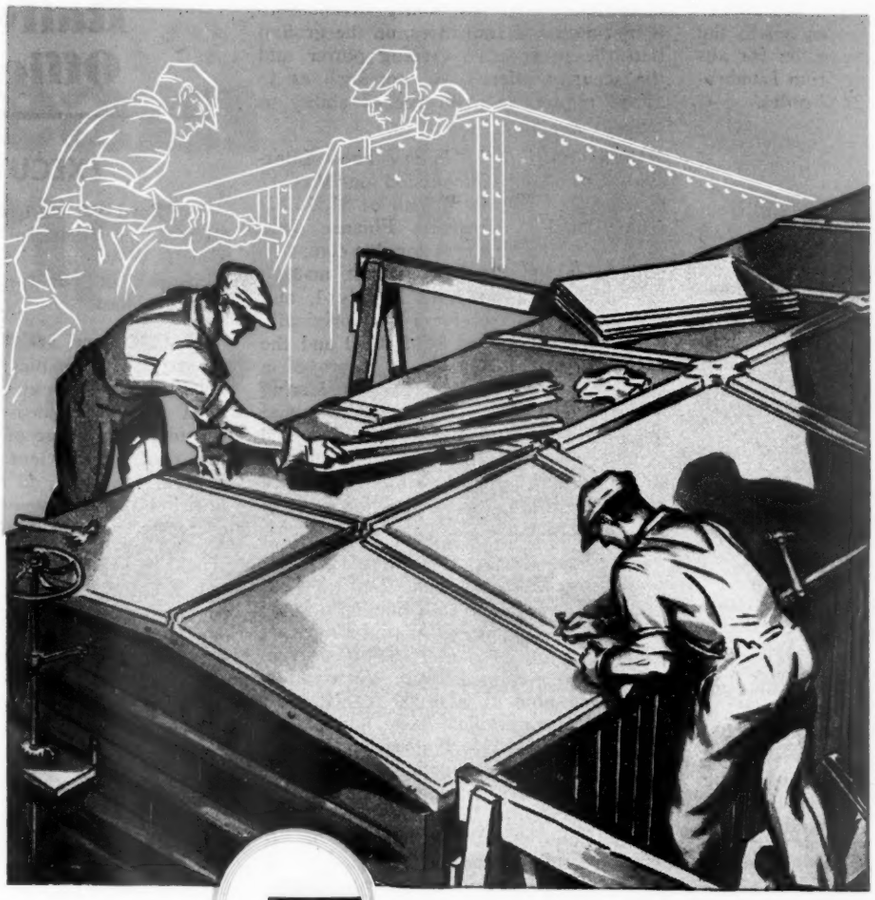

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REPUBLIC STEEL CORPORATION

HEADQUARTERS: YOUNGSTOWN, OHIO

RALEIGH & CHARLESTON.—*Abandonment.*—The receivers have applied to the Interstate Commerce Commission for authority to abandon the line from Lumberton, N. C., to Lakeview, 22.67 miles.

ST. LOUIS & HANNIBAL.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon that portion of its line extending from Bowling Green, Mo., to Gilmore, 52.6 miles.

SAND SPRINGS.—*R.F.C. Loan.*—This company has applied to the Interstate Commerce Commission and the Reconstruction Finance Corporation for a loan of $269,498 to pay taxes, interest, and payments on equipment trust obligations.

SOUTHERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its branch line from Rexford, Tenn., to Buladeen, 10.59 miles.

SOUTHERN PACIFIC.—*Omits Dividend.*—Directors of this company have omitted the $1 quarterly dividend on common stock due in February, but postponed at that time.

SOUTHERN PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized the Galveston, Harrisburg & San Antonio to abandon a line extending 2.9 miles from a connection with the main line at Strang, Tex., and of another line, 9.9 miles long, running from this line to Seabrook.

TEXAS & NEW ORLEANS.—*Abandonment.*—This company and the Houston & Texas Central have applied to the Interstate Commerce Commission for authority to abandon the line from Nellava Junction, Tex., to Mexia Junction, 94.10 miles.

TEXAS SOUTH EASTERN.—*R.F.C. Loan.*—The Interstate Commerce Commission has approved a loan of $30,000 to this company from the Reconstruction Finance Corporation to enable it to retire bank loans and notes.

UNION PACIFIC.—*Reduces Dividend.*—Directors of this company have reduced the quarterly dividend on common stock to $1.50. Previously the payment was $2.50.

UNION PACIFIC.—*Unification.*—Stockholders of the Union Pacific at the annual meeting on May 10 approved plans for the consolidation of the different units of the system into a single system. It is anticipated that about one year will be required to place the plan in effect after authorization by the Interstate Commerce Commission. The principal object of the consolidation program, which will affect the Oregon Short Line, the Oregon-Washington Railroad & Navigation Co., the Los Angeles & Salt Lake and the St. Joseph & Grand Island, is to effect accounting economies.

UVALDE & NORTHERN.—*R.F.C. Loan Denied.*—The Interstate Commerce Commission on May 16 denied approval of this company's application for a loan of $300,000 from the Reconstruction Finance Corporation to repay money advanced to it by Sugarland Industries, on the ground that the prospective earning power and the security offered are not such as to afford reasonable assurance of ability to repay the loan.

WABASH.—*F.R.C Loan.*—The Interstate Commerce Commission on May 17 approved an additional loan of $1,576,200 from the Reconstruction Finance Corporation to the receivers for this company, to provide funds to pay interest, maturities, and taxes on June 1, July 1, and August 1. The receivers had originally applied for a loan of $18,500,000 and the commission on February 10 approved a loan of $7,173,800, deferring considering of $9,750,000 to retire bank loans, and some other items. The receivers later filed a supplemental application for the amount now approved, which is without prejudice to consideration of further loans upon the application.

WICHITA FALLS & SOUTHERN.—*Approval of R.F.C. Loan Denied.*—The Interstate Commerce Commission on May 12 denied approval of this company's application for a loan of $800,000 from the Reconstruction Finance Corporation, to meet a note of $250,000 to the First National Bank, Dallas, Tex., and one of $550,000 to Frank Kell, president of the railroad, on the ground that he has made subscriptions to its capital stock in an amount exceeding all its maturing obligations and that the loan would, in effect, be a loan to him. The opinion also was expressed that the applicant's earnings are not sufficient to give reasonable assurance of ability to repay the loan at maturity.

WILLIAMSPORT & NORTH BRANCH.—*R.F.C. Loan.*—This company has applied to the Interstate Commerce Commission and the Reconstruction Finance Corporation for a loan of $50,000 to refund existing indebtedness.

Average Prices of Stocks and of Bonds

	May 17	Last week	Last year
Average price of 20 representative railway stocks..	15.55	18.24	65.43
Average price of 20 representative railway bonds..	52.99	56.83	91.63

Dividends Declared

Alabama Great Southern.—Preferred, $3.00, payable August 15 to holders of record July 9. Common dividend omitted.

Bessemer & Lake Erie.—Preferred, 3 per cent, semi-annually, payable June 1 to holders of record May 14.

Catawissa.—Common, $1.15, semi-annually, payable May 21 to holders of record May 10.

Cincinnati, New Orleans & Texas Pacific.—Common, $4.00, semi-annually, payable June 24 to holders of record June 6.

Delaware & Bound Brook.—$2.00, quarterly payable May 20.

New York Central.—Dividend omitted.

Rutland.—7 Per Cent Cumulative Preferred, dividend action deferred.

Union Pacific.—Common, $1.50, payable July 1 to holders of record June 1.

THE DENVER & RIO GRANDE WESTERN has applied to the Public Utilities Commission of Colorado for permission to supplant steam trains with motor coaches and trucks on 36 miles of branch line between Lake Junction, Colo., and Lake City.

Railway Officers

EXECUTIVE

Bradford W. Carlton, acting assistant to the president of the Chicago & North Western, with headquarters at Chicago, has been appointed assistant to the president.

H. C. Pearce, assistant to the general manager of the Chicago Great Western, with headquarters at Oelwein, Iowa, has been appointed assistant to the vice-president in charge of operation, following the appointment of **J. M. Baths,** general manager, to the newly-created position of vice-president in charge of operation, as noted in the *Railway Age* for May 7.

J. L. McKee, who has been appointed to the position of assistant vice-president of the New York Central Lines, with headquarters at Chicago, has been associated with several units of these lines throughout his railway career, with the exception of a short period of service with the Delaware, Lackawanna & Western. Mr. McKee was born on June 8, 1881, at Constantine, Mich., and obtained his first railway experience as a switchman and yardmaster on the New York Central at Elkhart, Ind. On October 25, 1907, he went with the Michigan Central as assistant yardmaster at Windsor, Ont., being promoted to yardmaster at the same point in the following year and to general yardmaster on

J. L. McKee

May 1, 1910. He was transferred to St. Thomas, Ont., in November of the same year, later serving successively in the same position at Victoria, Ont., and the Detroit Terminals. In 1912, Mr. McKee was further promoted to trainmaster, with headquarters at Detroit, being transferred a few months later to St. Thomas, where, in November, 1914, he was further promoted to superintendent, returning to Detroit in a similar capacity in September, 1916. A year later, Mr. McKee left the Michigan Cen-

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Steam Tight Valves

STEAM Tight Valves . . . no problem at all . . . just make sure that the chambers are equipped with bushings made of HUNT-SPILLER *Air Furnace* GUN IRON, and that the Bull Rings and Packing Rings are made of the same material.

The item "examine valves for blow" will no longer worry your roundhouse maintenance forces.

Your locomotives will show more "pep"—get over the road faster—haul maximum tonnage—consume less coal and require less attention.

To insure maximum efficiency apply HUNT-SPILLER GUN IRON wearing parts for the cylinders as well as the valves.

HSGI
Reg. U. S. Trade Mark
Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings
Parts Finished for Application
Dunbar Sectional Type Packing
Duplex Sectional Type Packing
(Duplex Springs for Above Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

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Air Furnace

tral to enter the service of the Delaware, Lackawanna & Western as a superintendent at Buffalo, N. Y. However, he returned to the Michigan Central in April, 1918, as assistant general superintendent with headquarters at Detroit. Two years later he was advanced to general superintendent at that point and in September, 1930, he was further promoted to assistant general manager, which position he was holding at the time of his recent appointment as assistant vice-president of the New York Central Lines at Chicago.

FINANCIAL, LEGAL AND ACCOUNTING

S. J. Potter, assistant treasurer of the Central region of the Canadian National, with headquarters at Toronto, Ont., has been appointed treasurer of the Northern Alberta (owned jointly by the Canadian National and the Canadian Pacific), with headquarters at Edmonton, Alta., succeeding **P. S. Chalmers.**

A. T. Cole, treasurer and assistant secretary of the Gulf Coast Lines, and assistant secretary and assistant treasurer of the International-Great Northern and the San Antonio, Uvalde & Gulf (all units of the Missouri Pacific) with headquarters at Houston, Tex., has been appointed assistant secretary of the Missouri Pacific, with headquarters at St. Louis, Mo., to succeed **F. W. Irland,** who was retired.

OPERATING

J. T. McCarthy has been appointed assistant freight trainmaster on the Pittsburgh division of the Pennsylvania with headquarters at Pittsburgh, Pa., to succeed **M. G. Schoch,** transferred.

Effective May 16, the Cumberland Valley division of the Pennsylvania became a part of the Philadelphia division, under the jurisdiction of **F. R. Gerard,** superintendent, with headquarters at Harrisburg, Pa., and the Elmira division was consolidated with the Williamsport division, under the jurisdiction of **H. E. Wolcott,** superintendent at Williamsport, Pa. At the same time that portion of the Williamsport division extending from its present junction with the Middle division to mile post 52, west of Lock Haven, became a part of the Middle division, under the jurisdiction of **J. B. Phelan,** superintendent, with headquarters at Altoona, Pa. The Sunbury division and that portion of the Schuylkill division, westward, from a point 500 ft. west of mile post 19, west of Franklin avenue, Norristown, Pa., have been combined as one division, to be known as the Wilkes-Barre division, under the jurisdiction of **E. C. Gegenheimer,** superintendent, with headquarters at Sunbury, Pa. That portion of the Schuylkill division, eastward of a point 500 ft. west of mile post 19, west of Franklin avenue, Norristown, has become part of the Philadelphia terminal division, under the jurisdiction of **F. L. Dobson,** superintendent, with headquarters at Philadelphia, Pa. **K. R. Vought** has been appointed superintendent of the Delmarva division, succeeding **W. R. Davis,** transferred. **T. B. Kennedy** has been appointed assistant to general superintendent of the eastern Pennsylvania division, with headquarters at Chambersburg, Pa., and **C. E. Brinser** has been appointed assistant to superintendent of the Williamsport division, with headquarters at Elmira, N. Y.

TRAFFIC

The title of **H. D. Wilkerson,** commercial agent of the Norfolk & Western, with headquarters at Pittsburgh, Pa., has been changed to general agent, and the position of commercial agent at that point has been discontinued.

SPECIAL

Samuel M. Fabrizio, special agent on the Atchison, Topeka & Santa Fe, with headquarters at Pueblo, Colo., has been promoted to superintendent of special service, with headquarters at La Junta, Colo., to succeed **T. O'Leary,** deceased.

ENGINEERING AND SIGNALING

R. P. Cummins, office engineer of the St. Louis-San Francisco, at St. Louis, Mo., has been appointed division engineer of the Northern division, with headquarters at Ft. Scott, Kan., to succeed **J. O. Armstrong,** who has resigned.

Gustave A. Laubenfels, district engineer of the old Iowa district of the Chicago, Burlington & Quincy until its consolidation with the former Missouri district to form the Central district about a year ago, with headquarters at Burlington, Iowa, retired from active service on May 1.

Allan W. Carpenter, assistant valuation engineer, has been appointed engineer of bridges, maintenance of way department, of the New York Central, lines Buffalo and East, succeeding **James L. Miller,** deceased. Mr. Carpenter will have headquarters as before at New York. Mr. Carpenter was born at Port Henry, N. Y., on February 28, 1873, and received his higher education at Case School of Applied Science, Cleveland, Ohio, from which he was graduated in 1895. He entered railway service on March 1, 1900, with the New York Central & Hudson River as assistant engineer in the bridge department, and has since been in continuous service with that road and its corporate successor, the New York Central. In 1902, he was appointed supervisor of bridges and buildings, Pennsylvania division, and in 1903, he was advanced to division engineer of the same division. In 1904, he became engineer of bridges, maintenance of way department, which position he held until 1906, when he was appointed engineer of structures, engineering department. From 1913 to 1924, he served as assistant valuation engineer, New York Central, and in 1925, he was appointed to a similar position on the New York Central Lines, which position has now been abolished, following Mr. Carpenter's appointment as engineer of bridges.

OBITUARY

Judge E. P. Holmes, who retired in 1929 as attorney for the Chicago, Rock Island & Pacific for Nebraska, died at Lincoln, Neb., on April 18.

James L. Miller, engineer of bridges, New York Central, with headquarters at New York, died at his home in Yonkers, N. Y., on April 29. Mr. Miller was born on July 18, 1874, at New York, and received his higher education at Columbia University, from which he was graduated with the degrees of B.S., Ph.B., and C.E. He began his railroad career in March, 1903, with the New York Central, as a draftsman in the maintenance of way department. In January, 1906, he was appointed assistant engineer in the engineering department, and in August, 1911, he was advanced to engineer of bridges, the position he held until his death.

C. A. Christofferson, who retired on April 1 as signal engineer of the Northern Pacific, with headquarters at St. Paul, Minn., as noted in the *Railway Age* of April 9, died at that place on May 13. Mr. Christofferson had been signal engineer of the Northern Pacific for 23 years. He was born on January 18, 1865, at Nyborg, Denmark, and after studying mechanical engineering in that country he came to the United States to take up service with the Union Switch & Signal Company. Mr. Christofferson began railroad service in 1890 as signal engineer of the Cleveland, Cincinnati, Chicago & St. Louis, and nine years later he accepted a similar position on the Chicago Great Western. He remained with this road until his appointment as signal engineer of the Northern Pacific in 1909, which position he held until his retirement on April 1.

Godfrey W. Rhodes, who retired in May, 1905, after 25 years of service in the mechanical and operating departments of the Burlington system, died at his home in Bergerville, Que., on April 27, at the age of 82. Mr. Rhodes entered the service of the Burlington system about 1880 and in 1888 was made superintendent motive power of the Chicago, Burlington & Quincy. Early in 1899 he was appointed assistant general superintendent of the Burlington & Missouri River Railroad. In September, 1904, the C. B. & Q. lines west of the Missouri river were divided into two districts and Mr. Rhodes became general superintendent of the Wyoming district, which position he held until his retirement in 1905. In the late 80's and the 90's he was one of the most active members of the American Railway Master Mechanics' Association and the Master Car Builders' Association. He was also actively identified with the Western Railway Club in various capacities.